Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
Project Ref:1150		Issue Date: 24-NOV-2025

Dep.	Name	Dep.	Name
Civil		Arch.	
E.E		Geo.	
M.E		Other	

WORK INSPECTION REQUEST (WIR)	WIR Reference No.	Rev.
	SHE-CUC-EL-10426	00

Project Name: ....Makkah Haram Shamiya Expansion CUC...

☐ CIVIL ☐ ARCH. ■ ELE. ☐ MECH. ☐ R&E ☐ GEO. ☐ OTHER

		Location		Level	From	To
IR Type:	Process SCADA System		Zone: Chiller Building			
			Area: EC to 3rd Mezz		var	var
Sub Contractor	Avanceon Saudi for Energy Co.		Axis: As per Highlight			

Request received by(Dar Al-Handasah) :-		Date & Time of Requested Inspection	
Name:	Date:	Date:	Time:

Description of work

Pulling fiber Optic cable (12C Fiber Optic Cable SM 9/ 125 OS2, Loose Tube, Glass Armour In-door/Outdoor LSOH Sheath) from 01-RTU-EC-01 to 01-RTU-M3-04 in Chiller building Area as per detail and highlighted drawings.

Reference Documents

Design Dwg.:	N/A
Shop	CUC-SD-SA-C02-B1-1120-R04-B CUC-SD-SA-C02-UF-1020-R02-B CUC-SD-SA-C02-BM-1220-04-B CUC-SD-MS-M02-CT-3500-R04-B CUC-SD-SA-C02-M3-1620-R03-B CUC-SD-SA-C02-M1-1420-R03-B
Rfi No.:	N/A
Checklist Ref No.:	ICL-1150-EL-037-00
Inspection and test plan :	ITP-1150-EL-037-00
Other Doc.:	SHE-CUC-MIR-EL-00655-0-B SHE-CUC-EL-8882-B SHE-CUC-EL-10942-B SHE-CUC-EL-8853-B SHE-CUC-EL-10445

	Construction Manager	QC Manager:		Project Manager:	
SBG Name: Sign:	ENG. M LABIB & ENG. M HOSNY	Name:	Eng. Omar Aldaher	Name:	Eng. Rami Okal
Avanceon Name: Sign:	ENG. ADNAN SAEED	Sign:		Sign:	

Title	Contractor/Subcontractor Name	Contractor/Subcontractor Signature	Consultant Name	Consultant Signature	Action
INSP.	ENG. SAJJAD HUSSAIN Eng.Hossam Zakria				☐A ☐B ☐C ☐D Date: / / 2025
SURV.					☐A ☐B ☐C ☐D Date: / / 2025
C.E.					☐A ☐B ☐C ☐D Date: / / 2025
E.E.	Eng. Syed Zubair Ali ENG. SAJJAD HUSSAIN				☐A ☐B ☐C ☐D Date: / / 2025
M.E.					☐A ☐B ☐C ☐D Date: / / 2025
ARCH.					☐A ☐B ☐C ☐D Date: / / 2025
GEO.					☐A ☐B ☐C ☐D Date: / / 2025
R&E					☐A ☐B ☐C ☐D Date: / / 2025
Other					☐A ☐B ☐C ☐D Date: / / 2025

STATUS

☐ A-Approved ☐ B-Approved as noted ☐ C-Revise and Resubmit ☐ D-Rejected

Resident Eng. .... Date:- / /

Received by Contractor :

Name: .... Date: .... Sign: ....

Note:

1- Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

2- Distribution : Original to Contractor and Copy to Consultant.

3- IR shall be closed within 48 hours from the above mentioned Date of Inspection.

4- IR must be submitted prior to inspection date and time by at least 24 hrs

Form No. QMPF-32-WIR-R05

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
Project Ref:1150		Issue Date: 24-NOV-2025

CONSULTANT'S COMMENTS (CC)

Sub-Project Name:	CUC	Date:	
Elements:	Process Scada System	WIR No:	SHE-CUC-EL-10426-R00
MIR No:	N/A		

Comments:

Sr No.	Name of the Engineer	Discipline	Comments

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

Consultant:	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor:

INSPECTION CHECK LIST	SUBSTATION AUTOMATION SYSTEM (SCADA)	
ICL-1150-EL-037-00	WIR Ref No.: SHE-CUC-EL-10426	Rev:00
SUB-PROJECT TITLE :-	INSPECTION DATE & TIME:	

Item No	ACCEPTANCE CRITERIA	SBG - QC		Consultant		NA	Comments
		PASS	FAIL	PASS	FAIL		
A	**SUBSTATION AUTOMATION SYSTEM (SCADA)**						
A1	Material approval as MIR.	√					
A2	All shop /coordination drawings and other related documents for related area are approved.	√					
A3	Check that all materials and accessories in accordance to latest approved drawings / specification.	√					
A4	Check that all Materials are free of physical damages and defects & missing parts	√					
A5	Check that Coordination is done with other related services	√					
B	**SECTION 1 - FIRST FIX WORKS**						
B1	Outlet boxes are installed at exact locations and levels as per specification and approved shop dwg.					√	
B2	Conduits will be terminated with locknuts and bushings or any approved fittings to boxes ,cabinets or boards .					√	
B3	Approved Pull boxes are provided for every two bend or every straight runs exceeding 15 meters.					√	
B4	Approved junction boxes should be provided in straight runs exceeding 30 meters .					√	
B5	Openings in Walls & floors for cable Tray crossing are sealed using fire proof sealant or other sealant as per Approval/Dwg					√	
B6	Conduit ,trunks crossing expansion joint provided with expansion coupler					√	
B7	Flexible conduit is used for final connection to field devices .					√	
B8	Separate conduits are used for each different system .					√	
B9	Check that Bending radius as per specs and manufacturer recommendation.	√					
B10	Installed raceways have no more than 2 quarter bends , field bends don't hinder cable pulling					√	
B11	Water proof material should be used between electrical and mechanical works in wet area (near any mechanical work which may leak , condensate , evaporate water or liquids)					√	
B12	Check that Draw - wires are pulled in all conduits					√	
B13	Check that knock out boxes should be closed					√	
B14	Check the cable tray and ladder are installed properly and routing as per latest approved shopdrawings.					√	
B15	Check for Vibration and seismic supports as per approved submittal and shopdrawings					√	
B16	Check that the approved proper supports for cable tray and ladder are provided at distance <1.5 m .					√	
B17	Cable trunks and trays are accessible to open the covers , pulling of cables and maintanance.					√	
B18	Check continuity and earthing of metal conduits , trunkes and cable tray / ladder by means of earth strips .					√	

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين

INSPECTION CHECK LIST	SUBSTATION AUTOMATION SYSTEM (SCADA)	
ICL-1150-EL-037-00	WIR Ref No.: SHE-CUC-EL-10426	Rev: 00
SUB-PROJECT TITLE :-	INSPECTION DATE & TIME:	

Item No	ACCEPTANCE CRITERIA	SBG - QC		Consultant		NA	Comments
		PASS	FAIL	PASS	FAIL		
B19	Check that approved labels and identification and color codes are provided and completed					√	
B21	Supports of cable trunks and trays are checked by civil engineer .					√	
C	SECTION 2 - SECOND FIX WORKS						
C1	Check cables for twisting & damage in outer insulation sheath.	√					
C2	Check the size, type, rating and color coding of cables installation as per latest approved shopdrawings / specs.	√					
C3	Check the cables tags , identification as per project specification along the route and at every change in direction and both ends, each side of duct etc.	√					
C4	Check that all cables are secured At ends to avoid excessive tension and protected from dust.	√					
C5	Check that Filling ratio of pulling cables in raceways is accepted	√					
C6	Check that the cables segregation and spacing are as per specification and .Manufacturer's recommendations.	√					
C7	Check the sealing of Pipe/pvc duct /openings in route of cable installed.					√	
C8	Check that Protective sleeves are provided as per specification, and location such as road crossing, passing from wall etc.					√	
C9	Check glanding of cables installed secured and correctly with accessories, no sharp bends.					√	
C10	Check termination, jointing as per procedure & identification of joints, its boxes and man holes etc.					√	
C11	Check cable for its supports & clamping at termination end.					√	
C12	Check the tightness of connection of terminals, screw and bolts, supports .. etc.					√	
C13	Check for adequate length of free conductors in boxes and at both the ends of termination.	√					
C14	Check that Continuity Test is done and accepted.					√	
C15	Check that Insulation Resistance Test is done and accepted.					√	
C16	Check for cable labeling at both ends, before and after crossing , as well each 15 m maximum (to be every 8 meters in congested area)	√					
C17	Check for cable ties					√	
D	SECTION 3 - THIRD FIX WORKS						
D1	Check that all cubicle / enclosures / communication racks are installed As per latest approved Shop Dwgs					√	
D2	Visually check that RTU Panel Equipment, Control Hardware, Workstation, Printer, Communication devices, Filed Devices etc. are not damaged.					√	

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Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين

INSPECTION CHECK LIST	SUBSTATION AUTOMATION SYSTEM (SCADA)	
ICL-1150-EL-037-00	WIR Ref No.: SHE-CUC-EL-10426	Rev: 00
SUB-PROJECT TITLE :-	INSPECTION DATE & TIME:	

Item No	ACCEPTANCE CRITERIA	SBG - QC		Consultant		NA	Comments
		PASS	FAIL	PASS	FAIL		
D3	Check the RTU Panel (I/O Modules - Processor module - Communication Module - Power supply unit) equipment and PLC panel equipment installed are identified according to specification.					√	
D4	Check the electronic equipment /RTU & PLC panel equipment and devices are properly installed & grounded.					√	
D5	Check the component, conductor, cable shield of grounding system to eliminate shock hazards and minimize ground loops, noise pickup and etc.					√	
D6	Check exact routing and layout of all cable tray, cabling and wireways etc are proper and as per approved drawings.					√	
D7	Protect cable end all time with acceptable end cap before cable termination.					√	
D8	Check cabling completed with wires terminated according to drawings & as specified RTU panel documents					√	
D9	Protect wire & cables from kinks. Inspect the cable dressing, segregation and spacing as per specification. Co-axial cable should not be bent lees than a 150 mm radius.					√	
D10	Check cable connections are correct and identified utilizing heat shrink, pre-printed, wire markers					√	
D11	Check the all wiring & cabling to ensure there are no unplanned grounds, open or short on any conductors or shield.					√	
D12	Properly ground each piece of electronic equipment prior to applying power. Ground all shielded wires to the appropriate earth ground at the hub end only					√	
D13	Ensure that all equipments are supplied from UPS source					√	
D14	Check that Device address list is prepared and available					√	
D15	Check that The ambient temprature is within the device operating temprature range.					√	
D16	Check that Programing And Adjusting are done as per project specification, approved material submittal & approved shop drawing.					√	
D17	Verify that all tests done as per approved ITP					√	
D18	Check that all equipment, devices, cables & wires etc are labeled and identified as per standards.					√	

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين

INSPECTION CHECK LIST	SUBSTATION AUTOMATION SYSTEM (SCADA)	
ICL-1150-EL-037-00	WIR Ref No.: SHE-CUC-EL-10426	Rev: 00
SUB-PROJECT TITLE :-	INSPECTION DATE & TIME:	

Item No	ACCEPTANCE CRITERIA	SBG - QC		Consultant		NA	Comments
		PASS	FAIL	PASS	FAIL		
D19	Check that All the interfaces are integrated					√	
D20	Check that Drawings are updated to as built.					√	
D21	Check that Testing and commissioning as per approved testing and commissioning plan for all of the system components are done and accepted.					√	

Site Engineer :	QC Engineer :	Consultant Engineer :
Name : Eng. Sajjad Hussain	Name : Eng.Hossam Zakaria	Name :
Signature :	Signature :	Signature :
Date :	Date :	Date :

Engineer's representative Approval

☐ Approved ☐ Approved as noted ☐ Revise and Resubmit ☐ Rejected

Comments :

Name : Signature : Date :

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

INSPECTION & TEST PLAN (ITP)

Ref:	ITP-1150-EL-037-03	ITEM DESCRIPTION: SCADA for ISS SYSTEM			DISCIPLINE: ELEC.		Date:oct 2018
S.No.	**Task Description**	**Reference Documents**	**Acceptance Criteria**	**Quality Records**	**SBG**	**QA/QC**	**DAR**
1	Approval Of Material submittals Related To SCADA for ISS System	1- The latest approved Project Quality Plan (PQP). 2- Issue For Construction Drawings (IFC). 3- Project Specifications: section# 16755 4- Approved Shop Drawings and details 5- RFI 6- Approved Calculations book. 7- Approved Method of Installations. 8- Compliance sheet with project documents and drawings. 9- Applicable codes and standards. 10-Approved BOQ	Matching and consistency between all reference documents and drawings.	Approved Technical Materials Submittal	H	H	R
2	Material Receiving: Inspection of received materials and related documents; 1- Visual Inspection. 2- Visual Inspection for all relevant standards and code marked on the materials. 3- Bills of Materials. 4- Compliance with approved type, model, part number, rating,..etc. 5- Installations and instruction manuals, data sheets, test certificates,...etc. 6- Materials storage and handling conditions. 7- Expiration date (if applicable). 8- Spare parts (if applicable). 9- Packing List (if applicable).	1- The latest approved PQP. 2- Approved Technical Materials Submittal including approved BOQ. 3- Approved sample documentations (if applicable). 4- Purchase Order. 5- Delivery Note. 6- RFI. 7- Factory Acceptance Test (FAT) if applicable. 8- Country of Origin certificate. 9- Manufacturer's instructions.	1-Matching and consistency of received material with the following : - Approved Technical Materials Submittal - checklist - Approved Sample. - Manufacturer's Recommendations. 2- Random sample test (if applicable).	1- Approved Material Inspection Request (MIR).	E	A	H

LEGEND

1- H 'hold point'	**Work may not proceed without the Consultant Approval (Signature Required to proceed).**
2- A 'Inspection'	**Work Inspected by SBG-Q.C**
3- W 'Witness'	**Provides a party with the opportunity to witness the inspection or test or aspect of the work, at their discretion.**
4- S 'Surveilliance'	**Consultant to monitor work in progress without notice from construction Organization (No Signature)**
5- M 'Monitor'	**Monitoring and supervision of work in progress by SBG-QC 9nO Signature)**
6- R 'Review / Record'	**Document review, record and approval.**
7- E 'Execution'	**Work executed and inspected by contractor**

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين

INSPECTION & TEST PLAN (ITP)

Ref:	ITP-1150-EL-037-03	ITEM DESCRIPTION: SCADA for ISS SYSTEM	DISCIPLINE: ELEC.	Date:oct 2018

S.No.	Task Description	Reference Documents	Acceptance Criteria	Quality Records	SBG	QA/QC	DAR
3	Installation: 1-Pre - installations works:related distributed rooms rooms and main rooms are completely finished from any construction work, architectural works, MEP work , clean from debris. 2- Check : raceways and 1st fix works installation including Cable and Conduit Seal Installation, pre-installations works before cable/wires pulling i.e. cleaning and readiness of trunks, raceways and boxes. 3- Check : cables/wires pulling and Conducting insulation resistance and continuity tests. 4- Installation of related fittings and accessories (joints, clamps, connectors, glands..etc). 5- Installation of the system field devices. 6- Cables termination with field devices. 7- Installation of equipment, AND CABINETS at distributed low current rooms 8- Installation of main equipment at main room and redundant main room 9- Cables termination with all equipment's and racks. 10- Interfacing & connecting the system with all related systems and devices : (ISS, .. etc) 11- Grounding of cable shields, raceways, racks and equipment's. 12-Identification of system components, wiring and terminals. 13- Programing and adjusting.	1- The latest approved PQP. 2- Issue For Construction Drawings (IFC). 3- Approved Shop Drawings and details. 4- RFI 5- Approved MIR. 6- Approved Bills of materials 7- Manufacturer's instructions and installations manuals.. 8- Approved Method of Statement for installations. 9- Applicable codes and standards such as IEC:61850 , IEC:60870 10-CONTRACT SPECS section # 16755	1- Matching and consistency of installations with the following : - Approved Method of Statement for installations of SCADA for ISS System - Approved Shop drawings. - Manufacturer's recommendation. - The relevant Check list. - Related codes and standards 2- Passing the testes mention in this section	1- Approved Work Inspection Request (WIR)	E	A	H

LEGEND

1- H 'hold point'	Work may not proceed without the Consultant Approval (Signature Required to proceed).
2- A 'Inspection'	Work Inspected by SBG-Q.C
3- W 'Witness'	Provides a party with the opportunity to witness the inspection or test or aspect of the work, at their discretion.
4- S 'Surveilliance'	Consultant to monitor work in progress without notice from construction Organization (No Signature)
5- M 'Monitor'	Monitoring and supervision of work in progress by SBG-QC 9nO Signature)
6- R 'Review / Record'	Document review, record and approval.
7- E 'Execution'	Work executed and inspected by contractor

INSPECTION & TEST PLAN (ITP)

Ref:	ITP-1150-EL-037-03	ITEM DESCRIPTION: SCADA for ISS SYSTEM			DISCIPLINE: ELEC.		Date:oct 2018
S.No.	**Task Description**	**Reference Documents**	**Acceptance Criteria**	**Quality Records**	**SBG**	**QA/QC**	**DAR**
4	Final Syatem Inspection (Testing and commissioning) : 1- final visual inspection to verify that all units and controls are properly installed ,connected and labeled. 2- Cable testing includes fiber optic cables' testing , Copper data cables testing ..etc 3-Testing and commissioning as per approved testing and commissioning plan for all of the system components including interfaces with all related systems .	1- Approved testing and commissioning plan 2- Approved shop drawings . 3-Applicable codes and standards such as IEC:61850 , IEC:60870 4- The latest approved PQP. 5- Approved Method of Statement for SCADA for ISS System installations. 6- Manufacturer's instructions and installations manuals. 7- The applicable Safety Regulations and Standards.	1- Passing testing and commissioning stage with matching and consistency with the following : - Approved testing and commissioning plan - Approved shop drawings. - Applicable codes and standards such as IEC:61850 , IEC:60870 - Approved Method of Statement for installations of SCADA for ISS System - Manufacturer's Recommendation. - The relevant Check list. 2- Cables to pass related testes	1- Approved Work Inspection Request (WIR) 2- Signed checklists for testing and commissioning of SCADA for ISS System	E	A	H
5	Mark Up of Shop Drawings for As-Built Drawings	1- The latest approved PQP. 2- Approved shop drawings . 3- Approved O&M manuals 4- Approved WIRs.	1- Matching and consistency of installations with the following : - Updated approved Shop Drawings as constructed. - Updated O&M manuals and other documents. - Commented manufacturer's instructions and installations manuals.	Approved As - Built drawings and documents including; shop drawings, operation manuals ..etc	H	H	R

LEGEND

1- H 'hold point'	Work may not proceed without the Consultant Approval (Signature Required to proceed).
2- A 'Inspection'	Work Inspected by SBG-Q.C
3- W 'Witness'	Provides a party with the opportunity to witness the inspection or test or aspect of the work, at their discretion.
4- S 'Surveilliance'	Consultant to monitor work in progress without notice from construction Organization (No Signature)
5- M 'Monitor'	Monitoring and supervision of work in progress by SBG-QC 9nO Signature)
6- R 'Review / Record'	Document review, record and approval.
7- E 'Execution'	Work executed and inspected by contractor

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
Project Ref: 1150		Issue Date: 15-01-2024

MATERIALS INSPECTION REQUEST (MIR)	MIR Reference No: SHE-CUC-MIR-EL-655	Rev. 00

Sub-Project Name: CUC

☐ Civil ☐ Architectural ☐ Mechanical ■ Electrical ☐ Geo. ☐ Utility (R&E) ☐ Others

RECEIVED Signature: dar

Date & Time of Requested Inspection: Date: 20-Jan-2024 Time: 04PM

Request Received by(DAR) : Name: Tanvir Ahmed Date 15-01-2024

MATERIAL DESCRIPTION: **Optical Fiber Cables; 12C Fiber Optic Cable SM 9/125 OS2, Loose Tube, Glass Armour Indoor/Outdoor LS0H Sheath**

Material Name:	Optical Fiber Cables; 12C Fiber Optic Cable SM 9/125 OS2, Loose Tube, Glass Armour Indoor/Outdoor LS0H Sheath		
Supplier / Sub-Contractor Name:	AVANCEON	ZONE: CUC, Wherever needed	
Manufacturer:	Datwyler	ATTACHMENTS: No. of Pages(27)	
Material submittal Reference:	CUC-MAT-SBG-EL-LC-G-0815-00-B 1	Purchase Order	N/A
Storage Location:	Training Centre - Basement	Material Test Report	N/A
Material Quantity:	12,000.00 Meters	Mill Test Report	N/A
Delivery Note:	2-DN-24-01-001	Delivery Note	2-DN-24-01-001
STA Ref. No. :	N/A	Origin Certificate	N/A
		Other	PDT-MAT-SBG-EL-LC-G-0050-01

Submitted By (Subcontractor):	QC Manager	Project Manager
Name: **Eng. Atif Baig**	Name: **Eng. Omar Aldaher**	Name: **Eng. Rami Okal**
Sign.: [signature]	Sign.: [signature]	Sign.: [signature]

INSPECTION ACTION

Trade	Contractor		Consultant		
	Name	Sign	Name	Sign	Action
EL	Mohamed Omara	[signature]	fahad alqurashi	[signature]	☐ A ☑ B ☐ D Date: / / 2024
					☐ A ☐ B ☐ D Date: / / 2024

INSPECTION REPORT:

DESCRIPTION	ACCEPTANCE			Initials	Remarks
Physical Damage ?	☐ Yes	☑ No			
Details given above correct ?	☑ Yes	☐ No			
Confirm with Approved Submission ?	☑ Yes	☐ No			
Accessories / Spare Parts included ?	☑ Yes	☐ No	☐ Not Applicable		
Expire Date ?	☐ Yes	☑ No	☐ Not Applicable		

For Artificial / MIR Type Stone and Precast panels	First Inspection Phase	☐ Panels Checked and Accepted ☐ Panels Checked and Not Accepted	2nd Inspection Phase	☐ Panels Checked and Accepted ☐ Panels Checked and Not Accepted

ENGINEER'S REPRESENTATIVE'S COMMENTS:

The above material has been inspected on Site and found at time of inspection to be :

Refer to engineer comments

STATUS

☐ A-APPROVED ☑ B-APPROVED AS NOTED ☐ D-REJECTED

Sign.: Eng.Osama ALhasanat [signature] Date: 22/01/2024

Received by Contractor :- Name: .... Sign.: .... Date: ....

Note:-1. Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

2. Distribution : Original to Contractor and Copy to Consultant.

3. MIR shall be closed within 7 days from the above mentioned Date of Inspection.

4- MIR must be submitted prior to inspection date and time by at least 24 hrs

		Contractor:
dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
Project Ref:1150		Issue Date: 15-01-2024

CONSULTANT'S COMMENTS (CC)

Sub-Project Name:	**CUC**	Date:	**20-Jan -2024**
Elements:	**MIR for Optical Fiber Cable**	WIR No:	**N/A**
MIR No:	**SHE-CUC-MIR-EL-655**		

Comments:

Sr No.	Name of the Engineer	Discipline	Comments
	FAHAD ALQURASHI	ELE	approval done baised on approval
			SBG- LC- EL-G -0815-00B1 and sample approval
			PDT-MAT-SBG LC-G-EL 0050 -01 AND
			CUC-SBG-LC-G-0815
			2/contractor responsible for saving and protect
			them
			21/01/2024 فريد

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

Consultant: dar — making progress together

THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS

Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP — Haramain Division قطاع الحرمين الشريفين

Dep.	Name	Dep.	Name
Civil		Arch.	
E.E	Eng. Osama AlHasanat	Geo.	
M.E		Other	Eng. Al Zain Ahmed

Project Ref:1150

Issue Date: 10-04-2025

WORK INSPECTION REQUEST (WIR)

WIR Reference No.	Rev.
SHE-CUC-EL-8853	00

Project Name: ……………Makkah Haram Shamiya Expansion CUC……………………………………………………………

☐ CIVIL ☐ ARCH. ■ ELE. ☐ MECH. ☐ R&E ☐ GEO. ☐ OTHER

IR Type: **Process SCADA System** (Stamp: RECEIVED, Signature, dar)

Sub Contractor **Avanceon Saudi for Energy Co.**

Location			Level	From	To
	Zone:	Chiller Building		298.50	302.60
	Area:	3rd Mezz Floor			
	Axis:	12-21/A-C			

Request received by(Dar Al-Handasah) :-

Name: Tanvir Ahmed Date: 10-04-2025

Date & Time of Requested Inspection

Date: 13-04-2025 Time:

Description of work

Installation of First Fixture-Cable Trunk & EMT Conduit and its accessories in Chiller Building 3rd Mezz for Process SCADA System in AXIS (12-21/A-C) as per below detail and highlighted drawings.

Reference Documents

Design Dwg.:	N/A
Shop Dwg.:	CUC-SD-SA-C02-M3-1623-R03-B CUC-SD-SA-C02-M3-1624-R03-B
Rfi No.:	N/A
Checklist Ref No.:	ICL-1150-EL-037-00
Inspection and test plan :	ITP-1150-EL-037-00
Other Doc.:	SHE-CUC-MIR-EL-571-R00 SHE-CUC-MIR-LC-060-R00 SHE-CUC-MIR-EL-561-R00

Construction Manager		QC Manager:		Project Manager:	
SBG Name: Sign:	ENG. M LABIB & ENG. M HOSNY (signatures)	Name:	Eng. Omar Aldaher	Name:	Eng. Rami Okal
Avanceon Name: Sign:	ENG. ADNAN SAEED (signature)	Sign:	(signature)	Sign:	(signature)

Title	Contractor/Subcontractor Name	Contractor/Subcontractor Signature	Consultant Name	Consultant Signature	Action
INSP.	ENG.HASAN SALAH	(signature)			☐A ☐B ☐C ☐D Date: / / 2025
SURV.	Eng. Faied Aldeeb	(signature)	Zain Ahmed	(signature)	☐A ☑B ☐C ☐D Date: 13 / 04 / 2025
C.E.					☐A ☐B ☐C ☐D Date: / / 2025
E.E.	Eng. Syed Zubair Ali ENG. SAJJAD HUSSAIN	(signatures)	Eng. Rasheed Nofal	(signature)	☐A ☑B ☐C ☐D Date: 15 / 04 / 2025
M.E.					☐A ☐B ☐C ☐D Date: / / 2025
ARCH.					☐A ☐B ☐C ☐D Date: / / 2025
GEO.					☐A ☐B ☐C ☐D Date: / / 2025
R&E					☐A ☐B ☐C ☐D Date: / / 2025
Other					☐A ☐B ☐C ☐D Date: / / 2025

STATUS

☐ A-Approved ☑ B-Approved as noted ☐ C-Revise and Resubmit ☐ D-Rejected

Resident Eng. Eng. Abdel-Aziem Abdallah A.Abdallah Date:- 15 / 04 / 2025

Received by Contractor :

Name: ………………………… Date: ………………… Sign: …………………

Note:

1- Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

2- Distribution : Original to Contractor and Copy to Consultant.

3- IR shall be closed within 48 hours from the above mentioned Date of Inspection.

4- IR must be submitted prior to inspection date and time by at least 24 hrs

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
Project Ref:1150		Issue Date: 10-04-2025

CONSULTANT'S COMMENTS (CC)

Sub-Project Name:	CUC	Date:	13-04-2025
Elements:	Process Scada System	WIR No:	SHE-CUC-EL-8853-R00
MIR No:	N/A		

Comments:

Sr No.	Name of the Engineer	Discipline	Comments
1	Zain Ahmed	Surv	- There are shifting's in location up to 1.37 m .
			- There are shifting's in level up to 1.15 m up .
			- See attached survey reports .
			- Final approved by Electrical Engineer .
			13-04-2025
	Eng. Rasheed Nofal	Electrical	* Space between cable trunk support should not exceed 1.5m
			* Remove any extra threaded rod
			*Provide expansion connector where cable trunk crosses a building expansion joint
			*Provide grounding connector for all cable trunk joint and to make sure its connected to main grounding system
			*Any modification of the original routing should reflected in as built drawing
			*Contractor responsible to provide cover after installation is completed.
			*Contractor responsible for any additional or change work in future.
			15-04-2025

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS				Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
	Dep.	Name	Dep.	Name	
	Civil		Arch.		
	E.E	Eng. Osama Alhasanat	Geo.		
Project Ref:1150	M.E		Other		Issue Date: 05-03-2025

WORK INSPECTION REQUEST (WIR)	WIR Reference No.	Rev.
	SHE-CUC-EL-10942	00

Project Name: CUC

☐ CIVIL ☐ ARCH. ■ ELE. ☐ MECH. ☐ R&E ☐ GEO. ☐ OTHER

		Location			Level	From	To
IR Type:	CABLE TRAYS AND LADDERS INSTALLATION		Zone:	**Electrical Culvert**			
			Area:	**Electrical Culvert-2**		N/A	N/A
Contractor	**SBG**		Axis:	(0 / 0+326)			

RECEIVED Signature: dar

Request received by(Dar Al-Handasah) :-

Name: Tanvir Ahmed Date: 05-03-2025

Date & Time of Requested Inspection

Date: 08-03-2025 Time: 10:00 AM

Description of work

CABLE TRAY AND LADDERS:

Final inspection for installation of Cable Tray/Ladder, Fittings & Accessories including installation of SEISMIC supports of cable tray/ladder, Including all layers with required supports and accessories at Electrical Culvert (EC2) from STA 0 to STA 0-326

as per attached documents.

Reference Documents

Design Dwg.:	N/A
Shop Dwg.:	CUC-SD-ER-E02-06010-R04 CUC-SD-ER-E03-06018-R02
Rfi No.:Rfi No.:Rfi No.:Rfi No.:Rfi No.:	N/A
Checklist Ref No.:	ICL-1150-EL-005-R03
Inspection and test plan :	ITP-1150-EL-005-R03
Other Doc.:	SHE-CUC-EL-1045,1323&2690-00-B SHE-CUC-EL-2821,2899&2941-00-B SHE-CUC-EL-1009,1206-2776&3002-01-B SHE-CUC-MIR-169,194.

Construction Manager		QC Manager:		Project Manager:	
Name:	Engr:Ahmed shawky	Name:	Eng. Omar Aldaher	Name:	Eng. Rami Okal
Sign:	[signature]	Sign:	[signature]	Sign:	[signature]

Title	Contractor/ Subcontractor		Consultant		Action
	Name	Signature	Name	Signature	
INSP.	Eng.Mostafa Khoilf Eng.Islam Naguib	[signature] [signature]			☐A ☐B ☐C ☐D Date: / / 2025
SURV.					☐A ☐B ☐C ☐D Date: / / 2025
C.E.					☐A ☐B ☐C ☐D Date: / / 2025
E.E.	Engr:Hussain Helmy Eng Abdulhamed	[signature] [signature]	Eng. Rasheed Nofal	[signature]	☐A ☑B ☐C ☐D Date: 06 / 03 / 2025
M.E.					☐A ☐B ☐C ☐D Date: / / 2025
ARCH.					☐A ☐B ☐C ☐D Date: / / 2025
GEO.					☐A ☐B ☐C ☐D Date: / / 2025
R&E					☐A ☐B ☐C ☐D Date: / / 2025
Other					☐A ☐B ☐C ☐D Date: / / 2025

STATUS

☐ A-Approved ☑ B-Approved as noted ☐ C-Revise and Resubmit ☐ D-Rejected

Resident Eng. Eng. Abdel-Aziem Abdallah A.Abdallah Date:- 06/ 03 / 2025

Received by Contractor :

Name: .... Date: .... Sign:

Note:

1- Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.
2- Distribution : Original to Contractor and Copy to Consultant.
3- IR shall be closed within 48 hours from the above mentioned Date of Inspection.
4- IR must be submitted prior to inspection date and time by at least 24 hrs

Form No. QMPF-32-WIR-R05

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
Project Ref:1150		Issue Date: 05-03-2025

CONSULTANT'S COMMENTS (CC)

Sub-Project Name:	CUC	Date:	08-03-2025
Elements:	Cable TRAY / LADDER	WIR No:	SHE-CUC-EL-10942-R00
MIR No.	N/A		

Comments:

Sr No.	Name of the Engineer	Discipline	Comments
	Eng. Rasheed Nofal	Electrical	*Based on previously approved WIR's of installation CABLE TRAY/LADDER as it is haven't recommendations / comments regard shortage of seismic supports, however contractor full responsibility to comply what are keep on approved shop drawing and project specifications.
			*Final approval is subject of handover process.
			*Contractor responsible for any additional or change work in future.
			*Contractor shall follow any additional requirements as per project contract terms and conditions.
			*Protection of materials are contractor responsibility.
			06-03-2025

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

Consultant: dar — making progress together

THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS

Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP — Haramain Division قطاع الحرمين الشريفين

Dep.	Name	Dep.	Name
Civil		Arch.	
E.E	Eng. Osama AlHasanat	Geo.	
M.E		Other	

Project Ref:1150

Issue Date: 21-SEP-2025

WORK INSPECTION REQUEST (WIR)

WIR Reference No.	Rev.
SHE-CUC-EL-10455	00

Project Name: ……………Makkah Haram Shamiya Expansion CUC……………………………………………………………………

☐ CIVIL ☐ ARCH. ■ ELE. ☐ MECH. ☐ R&E ☐ GEO. ☐ OTHER

		Location		Level	From	To
IR Type:	Process SCADA System		Zone: Service UG/ramp		271.30	284.00
			Area: UG/ramp			
Sub Contractor	Avanceon Saudi for Energy Co.		Axis:09-11/A-F			

RECEIVED Signature: dar

Request received by(Dar Al-Handasah) :-

Name: Tanvir Ahmed Date: 21-09-2025

Date & Time of Requested Inspection

Date: 23-09-2025 Time:

Description of work

Installation of First Fix EMT Conduit with accessories at Service UG ramp area
on AXIS 09-11/A-Fas per below
for Process SCADA System
detail and highlighted drawings

Reference Documents

Design Dwg.:	N/A
Shop Dwg.:	USE-SD-ER-E02-UF-3067-R02-B
Rfi No.:	N/A
Checklist Ref No.:	ICL-1150-EL-037-00
Inspection and test plan :	ITP-1150-EL-037-00
Other Doc.:	SHE-CUC-MIR-LC-060

Construction Manager		QC Manager:		Project Manager:	
SBG Name: Sign:	ENG. M LABIB & ENG. M HOSNY [signatures]	Name:	Eng. Omar Aldaher	Name:	Eng. Rami Okal
Avanceon Name: Sign:	ENG. ADNAN SAEED [signature]	Sign:	[signature]	Sign:	[signature]

Title	Contractor/Subcontractor Name	Contractor/Subcontractor Signature	Consultant Name	Consultant Signature	Action
INSP.	Eng. Hassan Salah	[signature]			☐A ☐B ☐C ☐D Date: / / 2025
SURV.					☐A ☐B ☐C ☐D Date: / / 2025
C.E.					☐A ☐B ☐C ☐D Date: / / 2025
E.E.	Eng. Syed Zubair Ali ENG. SAJJAD HUSSAIN	[signature] [signature]	*Eng. Abdullah Alsharif*	[signature]	☐A ✓B ☐C ☐D Date: 28 / 09 / 2025
M.E.					☐A ☐B ☐C ☐D Date: / / 2025
ARCH.					☐A ☐B ☐C ☐D Date: / / 2025
GEO.					☐A ☐B ☐C ☐D Date: / / 2025
R&E					☐A ☐B ☐C ☐D Date: / / 2025
Other					☐A ☐B ☐C ☐D Date: / / 2025

STATUS

☐ A-Approved ✓ B-Approved as noted ☐ C-Revise and Resubmit ☐ D-Rejected

Resident Eng. Eng. Abdel-Aziem Abdallah A.Abdallah Date:- 28 / 09 / 2025

Received by Contractor :

Name: ……………………………… Date: ……………… Sign: ………………

Note:

1- Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

2- Distribution : Original to Contractor and Copy to Consultant.

3- IR shall be closed within 48 hours from the above mentioned Date of Inspection.

4- IR must be submitted prior to inspection date and time by at least 24 hrs

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
Project Ref:1150		Issue Date: 21-SEP-2025

CONSULTANT'S COMMENTS (CC)

Sub-Project Name: CUC	Date: 23-09-2025
Elements: **Process Scada System**	WIR No: **SHE-CUC-EL-**10455-**R00**
MIR No: **N/A**	

Comments:

Sr No.	Name of the Engineer	Discipline	Comments
	Eng. Abdullah Alsharif	*Elec.*	- Contractor full responsibility for any additional or change work in future.
			- Contractor must be save all work installed from any damage.
			- Contractor full responsibility for Pull boxes are provided for every two bend or every straight runs exceeding 15 meters.
			- Any changes shall be reflected on as built drawing.
			- Final approval Subject to T&C.
			- Any corrective action may require due to mis-coordination is the contractor responsibility without any extra time and cost.
			28-09-2025

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.

Consultant: dar making progress together

THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS

Contractor: SAUDI BINLADIN GROUP — Haramain Division

Dep.	Name	Dep.	Name
Civil		Arch.	
E.E	ENG. OSAMA ALHASANAT	Geo.	
M.E		Other	

Project Ref:1150 — Issue Date: 12-04-2025

WORK INSPECTION REQUEST (WIR)

WIR Reference No.	Rev.
SHE-CUC-EL-8882	00

Project Name: ……………Makkah Haram Shamiya Expansion CUC……

☐ CIVIL ☐ ARCH. ■ ELE. ☐ MECH. ☐ R&E ☐ GEO. ☐ OTHER

		Location		Level From	Level To
IR Type:	Process SCADA System	Zone:	Chiller Building	280.30	284.50
		Area:	Basement Mezzanine Floor		
Sub Contractor	Avanceon Saudi for Energy Co.	Axis:	03-19/A-C		

RECEIVED Signature: dar

Request received by(Dar Al-Handasah) :-

Name: TANVIR AHMED Date: 12-04-2025

Date & Time of Requested Inspection — Date: 14-04-2025 Time:

Description of work

Installation of First Fix - EMT Conduit and its accessories in Chiller Building Basement Mezz for Process SCADA System in AXIS(03-19/A-C)asper below detail and highlighted drawings.

EMT Conduit size 1 inch =321 Meter

Reference Documents

Design Dwg.:	N/A
Shop Dwg.:	CUC-SD-SA-C02-BM-1220-R04-B
Rfi No.:	N/A
Checklist Ref No.:	ICL-1150-EL-037-00
Inspection and test plan :	ITP-1150-EL-037-00
Other Doc.:	SHE-CUC-MIR-LC-060-R00

Construction Manager		QC Manager:		Project Manager:	
SBG Name: Sign:	ENG. M LABIB & ENG. M HOSNY	Name:	Eng. Omar Aldaher	Name:	Eng. Rami Okal
Avanceon Name: Sign:	ENG. ADNAN SAEED	Sign:		Sign:	

Title	Contractor/Subcontractor Name	Contractor/Subcontractor Signature	Consultant Name	Consultant Signature	Action
INSP.	ENG.HASAN SALAH				☐A ☐B ☐C ☐D Date: / / 2025
SURV.					☐A ☐B ☐C ☐D Date: / / 2025
C.E.					☐A ☐B ☐C ☐D Date: / / 2025
E.E.	Eng. Syed Zubair Ali ENG. SAJJAD HUSSAIN		Eng. Rasheed Nofal		☐A ☑B ☐C ☐D Date: 15 / 04 / 2025
M.E.					☐A ☐B ☐C ☐D Date: / / 2025
ARCH.					☐A ☐B ☐C ☐D Date: / / 2025
GEO.					☐A ☐B ☐C ☐D Date: / / 2025
R&E					☐A ☐B ☐C ☐D Date: / / 2025
Other					☐A ☐B ☐C ☐D Date: / / 2025

STATUS

☐ A-Approved ☑ B-Approved as noted ☐ C-Revise and Resubmit ☐ D-Rejected

Resident Eng. ENG. ABDEL-AZIEM ABDALLAH A.Abdallah Date:- 15 / 04 / 2025

Received by Contractor :

Name: …………… Date: …………… Sign: ……………

Note:

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2- Distribution : Original to Contractor and Copy to Consultant.

3- IR shall be closed within 48 hours from the above mentioned Date of Inspection.

4- IR must be submitted prior to inspection date and time by at least 24 hrs

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: مجموعة بن لادن السعودية SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
Project Ref:1150		Issue Date: 12-04-2025

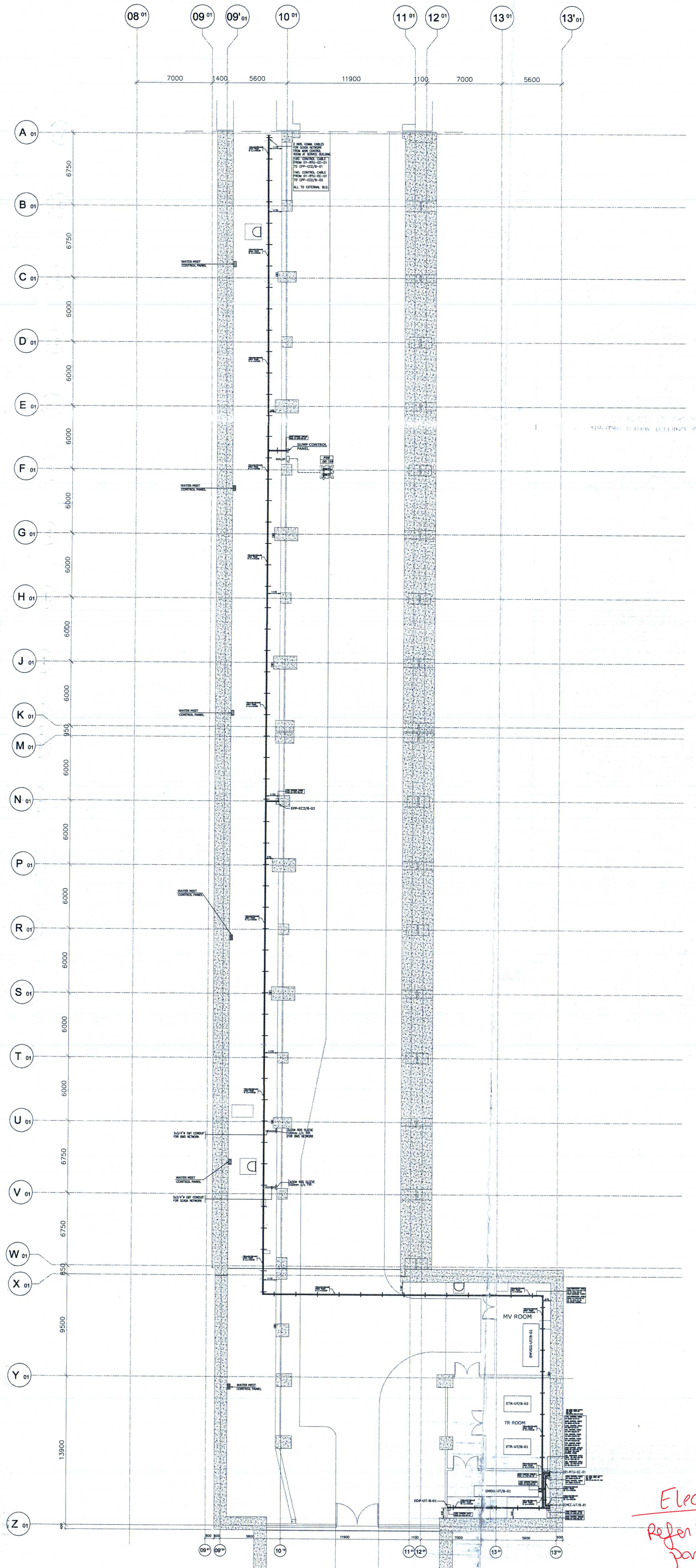
CONSULTANT'S COMMENTS (CC)

Sub-Project Name:	CUC	Date:	14-04-2025
Elements:	Process Scada System	WIR No:	SHE-CUC-EL-8882-R00
MIR No:	N/A		

Comments:

Sr No.	Name of the Engineer	Discipline	Comments
	Eng. Rasheed Nofal	Electrical	*Contractor responsible to protect materials from any damage.
			*Contractor responsible for any additional or change work in future.
			*Any corrective action may require due to miss-coordination is the contractor responsibility without any extra time and cost.
			*Any change for the original routing should reflect to as built drawing.
			*All unused knockout in boxes should be closed.
			*Refer to comments on attached checklist
			15-04-2025

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore shall not imply any recognition whatsoever of additional time and/ or cost.



APPROVED MATERIAL SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PLC & SCADA MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-032-R01	B
2	INSTRUMENTS MATERIAL	CUC-MAT-BV-EL-BM-045-R07	B
3	CONTROL CABLES MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-044-R04	A
4	TRUNKING & TRUNKS ACCESSORIES	CUC-MAT-BV-EL-BM-051-R01	B
5	COMM. CABLE MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-055-R03	B
6	GATEWAYS MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-062-R00	B
7	FIBER OPTIC NETWORK	CUC-MAT-BV-EL-BM-056-R01	B/C
8	INSTRUMENTS SS TUBES & FITTINGS	CUC-MAT-BV-EL-BM-078-R01	B
9	CONDUITS & FITTINGS	CUC-MAT-BV-EL-BM-074-R00	B

REFERENCE FOR ENGINEERING SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PHYSICAL I/O LIST	CUC-MAT-BV-EL-BM-040-R06	B
2	PLC & RIO Mechanical & Wiring diagram	CUC-MAT-BV-EL-BM-039-R03	B
3	P & ID	CUC-MAT-BV-EL-BM-083-R01	B
4	SYSTEM LAYOUT	CUC-MAT-BV-EL-BM-050-R02	B

8

Reference shall be made to the last approved material submittal

ElecCODE (B)
Refer to comments on Portal drawings
8/6/2016

SCADA
Refer to General comments on DWG # CUC-SD-SA-C02-BM-1220
Code "B"
14/6/2016

LOCATION TAGS:

CTMW – COOLING TOWER MAKEUP WATER
SCHWS – SECONDARY CHILLED WATER SUPPLY
SCHWR – SECONDARY CHILLED WATER RETURN
SVCHWS – SECONDARY VAC CHILLED WATER SUPPLY
SVCHWR – SECONDARY VAC CHILLED WATER RETURN
STW – STORM WATER
CHW – CHILLED WATER
CHWS – CHILLED WATER SUPPLY
CHWR – CHILLED WATER RETUREN
PCHWS – PRIMARY CHILLED WATER SUPPLY
PCHWR – PRIMARY CHILLED WATER RETURN
MCHWS – MAIN CHILLED WATER SUPPLY
MCHWR – MAIN CHILLED WATER RETURN
CW – CONDENSER WATER
CWS – CONDENSER WATER SUPPLY
CWR – CONDENSER WATER RETURN
CTEW – COOLING TOWER ENTERING WATER
CTLW – COOLING TOWER LEAVING WATER
ECHW – EMEREGENCY CHILLED WATER
ECHWS – EMEREGENCY CHILLED WATER SUPPLY
ECHWR – EMEREGENCY CHILLED WATER RETURN
DEC – DECOUPLER
AC – AIR COMPRESSOR
CHWM – CHILLED WATER MAKE– UP
MCHWS – MAIN CHILLED WATER SUPPLY
MCHWR – MAIN CHILLED WATER RETURN
ET – EXPANSION TANK
SCHW – SECONDARY CHILLED WATER
HEXCHW – HEAT EXCHANGER CHILLED WATER
MHEXH – MAIN HEAT EXCHANGER HOT SIDE
HEXCS – HEAT EXCHANGER COOLED SIDE SUPPLY
HEXHS – HEAT EXCHANGER HOT SIDE SUPPLY
HEXHR – HEAT EXCHANGER HOT SIDE RETURN
MHEXHS – MAIN HEAT EXCHANGER HOT SIDE SUPPLY
MHEXHR – MAIN HEAT EXCHANGER HOT SIDE RETURN
HEXET – HEAT EXCHANGER EXPANSION TANK
MHEXCS – MAIN HEAT EXCHANGER COLD SIDE SUPPLY
MHEXCR – MAIN HEAT EXCHANGER COLD SIDE RETURN
SSF – SIDE STREAM FILTERS
BS – BASKET STRAINER
CTB – COOLING TOWER BASIN
CTBL – COOLING TOWER BASIN LEVEL LOW
CTBH – COOLING TOWER BASIN LEVEL HIGH
MDWS – MAIN DOMESTIC WATER SUPPLY
GWPU – GREY WATER PRESSURIZING UNITS
GWT – GREY WATER TANK
PFP – PIAZZA FIRE PUMP
CUCFP – CUC FIRE PUMP
HHFP – HOLY HARM FIRE PUMP
IRP – IRRIGATION PUMPS
WMP – WATER MIST PUMP
WT – WATER TANK
JF – JET FAN
RMCHWS – RIGHT WING MAIN CHW SUPPLY
RMCHWR – RIGHT WING MAIN CHW RETURN
RHWT – RECEIVING HEDA WATER TANK
GWSL – GREY WATER SUPPLY LINE
MCHW – MAIN CHILLED WATER
TWES – TREATED WATER EFFLUENT SUPPLY
MSVCHWS – MAIN VAC SECONDARY CHILLED WATER SUPPLY
MSVCHWR – MAIN VAC SECONDARY CHILLED WATER RETURN
CTBD – COOLING TOWER BLEED LINE
CTD – COOLING TOWER DRAIN
DWS – DOMESTIC WATER SUPPLY

UNDER GROUND INSTRUMENT TAGS:

PDS–00/01A
PDS–00/01B

TORQUE AUTOMATION SYS.
CERTIFIED DRAWING BY TORQUE
DATE: 25/12/2014

TORQUE Automation Systems
P.O.Box: 12178, Sharjah,
UAE TEL: 00971 6 5579973,
FAX: 00971 6 5579974

dar al-handasah shair and partners
CODE 1: APPROVED
CODE 2: APPROVED AS NOTED WORK MAY PROCEED SUBJECT TO INCORPORATION OF ENDORSED COMMENTS
CODE 3: RESUBMIT FOR APPROVAL WORK MAY NOT PROCEED
CODE 4: REJECTED
Date: 16/6/2016

المملكة العربية السعودية

Ministry of Higher Education

مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

Client:
KING ABDULLAH BIN ABDULAZIZ PROJECT THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

Consultant:
dar al-handasah shair and partners

NOTES:

1) SCADA NETWORK SLEEVES ARE CONSIDERED FOR LINKING BETWEEN BUILDINGS FLOORS & SCADA RISER WILL BE SUBMITTED.
2) FOR CONTROL CABLE TRUNKS DETAILS REFER TO DRAWING # CUC-SD-SA-C02-UF-1040
3) ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4) FOR RTU/PLC WIRING PLEASE REFER TO SUBMITTAL # CUC-MAT-BV-EL-BM-039-R03.
5) REFER TO ENGINEERING SUBMITTALS FOR P&ID, INSTRUMENTS HOOK-UP INSTRUMENTS LIST, CABLE SCHEDULE, OVERALL SYSTEM LAYOUT.
6) RTU PANELS INSTALLATION DETAILS REFER TO DRAWING#CUC-SD-SA-C03-GN-0001-R00
7) RTU PANELS COMMUNICATION BLOCK DIAGRAM REFER TO DRAWING # CUC-SD-SA-C08-GN-1000-R00
8) REFER TO SUBMITTAL TABLE FOR MATERIAL SUBMITTAL APPROVAL & ENGINEERING SUBMITTAL APPROVAL

RTU TAGGING SCHEME
XX-XXXX-XXXX-YY:YY
SERIAL NUMBER
FLOOR TAG
RTU / PLC
BUILDING TAG

INSTRUMENTS TAGGING SCHEME
XX-XXXX-XXXX-YY:YY
NO. OF EACH INSTRUMENT
LOCATION TAG
EQUIPMENT TAG
BUILDING TAG

BUILDING TAGS:
WT: CUC-U/G WATER TANK
00: CUC-EXTERNAL WORKS
01: CUC-CHILLER PLANT
02: CUC-GENERATOR PLANT
03: CUC-SERVICE BUILDING
04: CUC-CENTRAL WASTE HANDLING PLANT

LAYOUT SYMBOLS
CONTROL CABLE
POWER CABLE
PROFIBUS DP CABLE
PROFIBUS PA CABLE
CABLE TRUNK SUPPORT
RTU/REMOTE TERMINAL UNIT
PARTITIONED CABLE TRUNK
RGS CONDUIT
EMT CONDUIT
STAINLESS STEEL TUBE

BLDG KEY PLAN

COORDINATION TABLE

	ARCH.	STRUC.	HVAC.	PLUM.	F.F.	ELEC.
DATE			09/02/14	09/02/14	09/02/14	09/02/14
INITIAL			A.T	H.R	M.S	Q.S

SHOP DRAWINGS REFS. :

1	UCH-SD-ER-E02-UF-1117-R03
2	UCH-SD-MH-M02-UF-1168-R00
3	UCH-SD-MH-M02-UF-1171-R00
4	CUC-SD-SA-C02-UF-1050-R03

DESIGN DRAWINGS REFS. :

1	S09077-01D-TD-GN-MH-601-R01	9	S09077-01D-TD-GN-MH-620:621-R00
2	S09077-01D-TD-GN-MH-602:603-R02		
3	S09077-01D-TD-GN-MH-604:605-R03		
4	S09077-01D-TD-GN-MH-606:607-R02		
5	S09077-01D-TD-GN-MH-608:610-R01		
6	S09077-01D-TD-GN-MH-611:612-R00		
7	S09077-01D-TD-GN-MH-613:616-R02		
8	S09077-01D-TD-GN-MH-617:619-R00		

Rev.	Description	Dwn. By	Chk. By	Date
2	SUBMITTED FOR APPROVAL.	AA	MR	25/12/14
1	SUBMITTED FOR APPROVAL.	WM	MR	17/07/14
0	SUBMITTED FOR APPROVAL.	NA	MH	09/02/14

MAIN CONTRACTOR:
مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

SUB CONTRACTOR:
INMA
شركة إنماء المرافق للمقاولات
INMA UTILITIES CONTRACTING CO.

E & I CONTRACTOR:
TORQUE Automation Systems
P.O.Box: 12178, Sharjah,
UAE TEL: 00971 6 5579973,
FAX: 00971 6 5579974

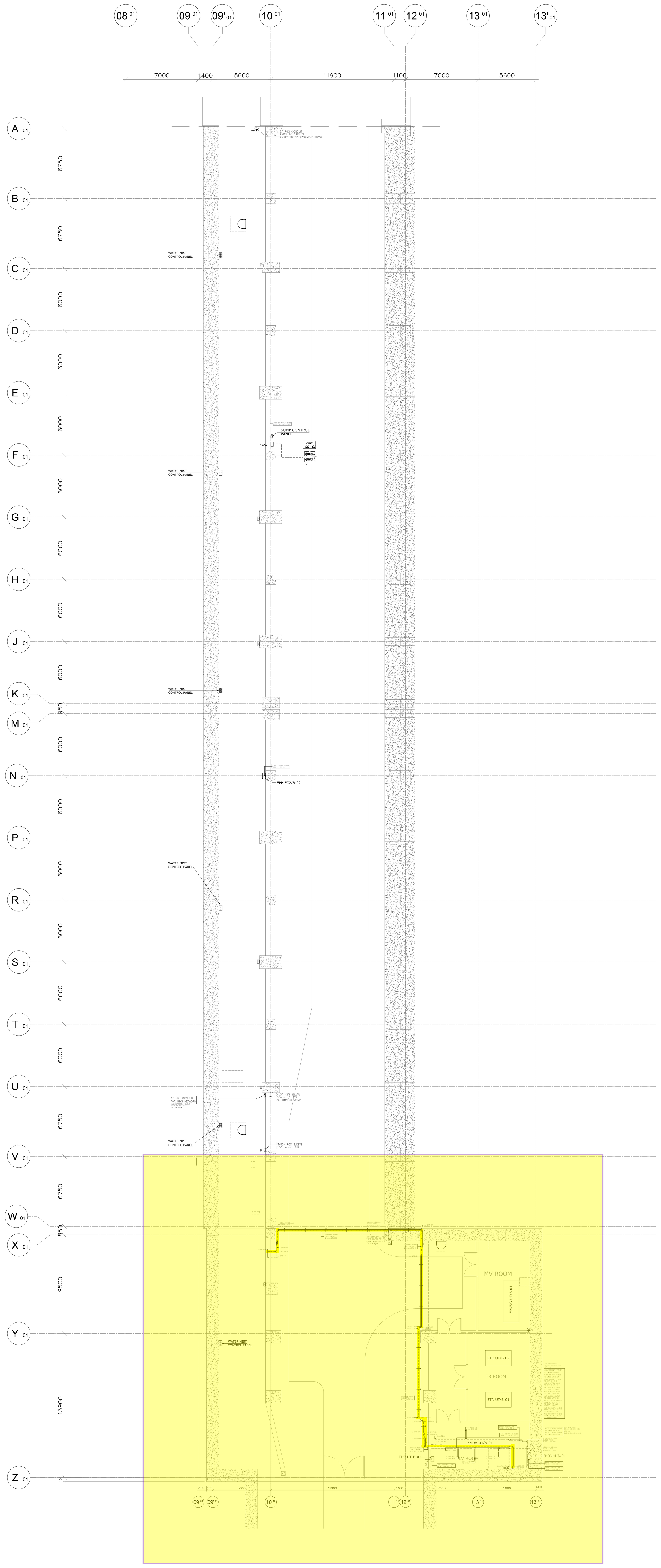
PROJECT TITLE:
CENTRAL UTILITY COMPLEX & UTILITY TUNNEL

SHOP DRAWING TITLE :
UNDER GROUND RAMP PROCESS SCADA CABLE ROUTING GENERAL LAYOUT

Drawing No.
CUC-SD-SA-C02-UF-1020

Scale	Date	Drawn By	Checked By	Approved By	Rev. No.
1:200 (A0)	25/12/14	AA	MR	AS	2

Low Current Code B
Refer to Connection drawing no CUC-SD-SA-C02-BM-1226
G. HA
30.05.2016



FOR ASBUILT

LOCATION TAGS:

- CTMW – COOLING TOWER MAKEUP WATER
- SCHWS – SECONDARY CHILLED WATER SUPPLY
- SCHWR – SECONDARY CHILLED WATER RETURN
- SVCHWS – SECONDARY VAC CHILLED WATER SUPPLY
- SVCHWR – SECONDARY VAC CHILLED WATER RETURN
- STW – STORM WATER
- CHW – CHILLED WATER
- CHWS – CHILLED WATER SUPPLY
- CHWR – CHILLED WATER RETUREN
- PCHWS – PRIMARY CHILLED WATER SUPPLY
- PCHWR – PRIMARY CHILLED WATER RETURN
- MCHWS – MAIN CHILLED WATER SUPPLY
- MCHWR – MAIN CHILLED WATER RETURN
- CW – CONDENSER WATER
- CWS – CONDENSER WATER SUPPLY
- CWR – CONDENSER WATER RETURN
- CTEW – COOLING TOWER ENTERING WATER
- CTLW – COOLING TOWER LEAVING WATER
- ECHW – EMEREGENCY CHILLED WATER
- ECHWS – EMEREGENCY CHILLED WATER SUPPLY
- ECHWR – EMEREGENCY CHILLED WATER RETURN
- DEC – DECOUPLER
- AC – AIR COMPRESSOR
- CHWM – CHILLED WATER MAKE–
- MCHWS – MAIN CHILLED WATER SUPPLY
- MCHWR – MAIN CHILLED WATER RETURN
- ET – EXPANSION TANK
- SCHW – SECONDARY CHILLED WATER
- HEXCHW – HEAT EXCHANGER CHILLED WATER
- MHEXH – MAIN HEAT EXCHANGER HOT SIDE
- HEXCS – HEAT EXCHANGER COOLED SIDE SUPPLY
- HEXHS – HEAT EXCHANGER HOT SIDE SUPPLY
- HEXHR – HEAT EXCHANGER HOT SIDE RETURN
- MHEXHS – MAIN HEAT EXCHANGER HOT SIDE
- MHEXHR – MAIN HEAT EXCHANGER HOT SIDE RETURN
- HEXET – HEAT EXCHANGER EXPANSION TANK
- MHEXCS – MAIN HEAT EXCHANGER COLD SIDE SUPPLY
- MHEXCR – MAIN HEAT EXCHANGER COLD SIDE RETURN
- SSF – SIDE STREAM FILTERS
- BS – BASKET STRAINER
- CTB – COOLING TOWER BASIN
- CTBL – COOLING TOWER BASIN LEVEL LOW
- CTBH – COOLING TOWER BASIN LEVEL HIGH
- MDWS – MAIN DOMESTIC WATER SUPPLY
- GWPU – GREY WATER PRESSURIZING UNITS
- GWT – GREY WATER TANK
- PFP – PIAZZA FIRE PUMP
- CUCFP – CUC FIRE PUMP
- HHFP – HOLY HARM FIRE PUMP
- IRP – IRRIGATION PUMPS
- WMP – WATER MIST PUMP
- WT – WATER TANK
- JF – JET FAN
- RMCHWS – RIGHT WING MAIN CHW SUPPLY
- RMCHWR – RIGHT WING MAIN CHW RETURN
- RHWT – RECEIVING HEDA WATER TANK
- GWSL – GREY WATER SUPPLY LINE
- MCHW – MAIN CHILLED WATER
- TWES – TREATED WATER EFFLUENT SUPPLY
- MSVCHWS – MAIN VAC SECONDARY CHILLED WATER SUPPLY
- MSVCHWR – MAIN VAC SECONDARY CHILLED WATER RETURN
- CTBD – COOLING TOWER BLEED LINE
- CTD – COOLING TOWER DRAIN
- DWS – DOMESTIC WATER SUPPLY

UNDER GROUND INSTRUMENT TAGS:

PDS–00/01A
PDS–00/01B

NOTES:

1) SCADA NETWORK SLEEVES ARE CONSIDERED FOR LINKING BETWEEN BUILDINGS FLOORS & SCADA RISER WILL BE SUBMITTED.
2) ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
3) FOR RTU/PLC WIRING PLEASE REFER TO SUBMITTAL # CUC–MAT–BV–EL–BM–039–R03.
4) REFER TO ENGINEERING SUBMITTALS FOR P&ID, INSTRUMENTS HOOK–UP INSTRUMENTS LIST, CABLE SCHEDULE, OVERALL SYSTEM LAYOUT.
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6) RTU PANELS COMMUNICATION BLOCK DIAGRAM REFER TO DRAWING # CUC–SD–SA–C08–GN–1000–R00
7) REFER TO SUBMITTAL TABLE FOR MATERIAL SUBMITTAL APPROVAL & ENGINEERING SUBMITTAL APPROVAL

RELATED DOCUMENTS

NO.	WIR NO.	REV	DATE
01			
02			
03			

RELATED MATERIALS

NO.	NAME.	SUBMITAL NO.	STATUS
01	CUC–MAT–BV–EL–BM–032	PLC & SCADA MATERIAL SUBMITTAL	APPROVED
02	CUC–MAT–BV–EL–BM–045	INSTRUMENTS MATERIAL	APPROVED
03	CUC–MAT–BV–EL–BM–044	CONTROL CABLES MATERIAL SUBMITTAL	APPROVED
04	CUC–MAT–BV–EL–BM–051	TRUNKING & TRUNKS ACCESSORIES	APPROVED
05	CUC–MAT–BV–EL–BM–055	COMM. CABLE MATERIAL SUBMITTAL	APPROVED
06	CUC–MAT–BV–EL–BM–078	INSTRUMENTS SS TUBES & FITTINGS	APPROVED
07	CUC–MAT–BV–EL–BM–079	CONDUITS & FITTINGS	APPROVED
08	CUC–MAT–BV–EL–BM–056	FIBER OPTIC NETWORK	APPROVED
09	CUC–MAT–BV–EL–BM–062	GATEYWAYS MATERIAL SUBMITTAL	APPROVED
10	CUC–MAT–BV–EL–BM–040	MATERIAL SUBMITTAL DESCRIPTION	APPROVED
11	CUC–MAT–BV–EL–BM–039	PLC & RIO MECHANICAL & WIRING DIAGRAM	APPROVED
12	CUC–MAT–BV–EL–BM–083	P & ID	APPROVED
13	CUC–MAT–BV–EL–BM–050	SYSTEM LAYOUT	APPROVED

QUANTITY SURVEY

NO.	NAME.	QUANTITY	DATE

S.B.G. COORDINATION

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

R E V I S I O N

NO.	REVISION DESCRIPTION	ACTION CODE	DATE	BY
00	ISSUED FOR APPROVAL		12–11–24	NK

SHOP & DESIGN DRAWING REFERENCES

NO.	DWG. No.	DRAWING TITLE	REV.	DATE
01	CUC–SD–SA–C02–UF–1020	Under Ground Ramp Process SCADA Cable Routing General Layout	02	25–12–2014
02	CUC–SD–SA–C02–UF–1021	Under Ground Ramp Process SCADA Cable Routing Part 01 of 12	02	25–12–2014
03	CUC–SD–SA–C02–UF–1022	Under Ground Ramp Process SCADA Cable Routing Part 02 of 12	02	25–12–2014

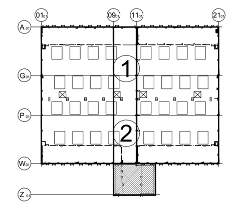
LETTERS & RFI'S REFERENCES

NO.	DOC. No.	DOCUMENT DESCRIPTION	DATE
01			
02			

DAR REVIEWER

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

KEY PLAN



PROJECT: المشروع

THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

CLIENT: المالك

وزارة المالية
Ministry of Finance

DESIGN & CONSULTANT: الاستشاري

dar
making progress together

GENERAL CONTRACTOR: المقاول العام

SAUDI BINLADIN GROUP

SUB CONTRACTOR:

AVANCEON
Tomorrow's solutions, today.

ZONE NAME: وصف المبنى

CHILLER PLANT

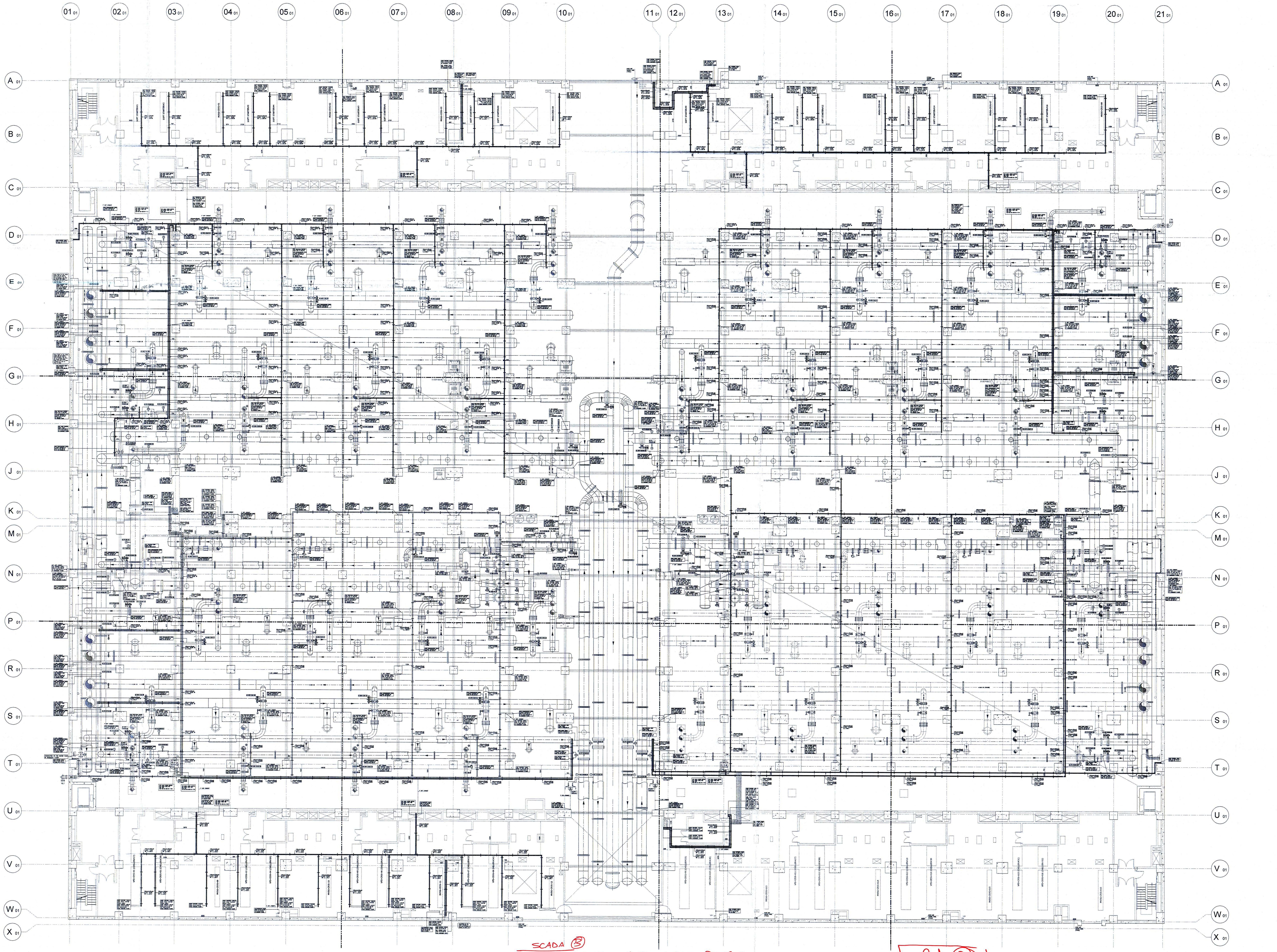
DRAWING TITLE: اسم اللوحة

AS–BUILT CHILLER PLANT
UNDER GROUND RAMP PROCESS SCADA
CABLE ROUTING GENERAL LAYOUT

DRAWN BY:	N.Khaliq		DATE	10/03/2025
CHECKED BY:	S.Hussain		SCALE	NTS
REVIEWED BY:	H.Shahbaz		SHEET SIZE	A0
APPROVED BY:	A.Saeed			

DRAWING & TRANSMITTAL No.

BUILDING NAME	DWG TYPE	TRADE	SUB TRADE	LEVEL	DRAWING NUMBER	REV. No.
CUC	AB	SA	C02	UF	10	00



LC Comments:-
** Refer to Comments on DWG #
CUC-SD-SA-C02-BM-1221-04.
23/10/2017

SCADA (B)
Refer to SCADA General Comments on DWG #
CUC-SD-SA-C02-BM-1221
24/10/2017

Code (B)
M. ElSayed
16/10/2017

* Refer to the Comments on the Part Plans & (Previous Revision)
* Refer to the Comments on the Drawing Ref:
(CUC-SD-SA-C02-BM-1228-R04)
The Contractor is held responsible for Any deviation or remedy Works In the Site due to any Unclouded Change.

APPROVED MATERIAL SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PLC & SCADA MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-032-R01	B
2	INSTRUMENTS MATERIAL	CUC-MAT-BV-EL-BM-045-R07	B
3	CONTROL CABLES MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-044-R04	A
4	TRUNKING & TRUNKS ACCESSORIES	CUC-MAT-BV-EL-BM-051-R01	B
5	COMM. CABLE MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-055-R03	B
6	INSTRUMENTS SS TUBES & FITTINGS	CUC-MAT-BV-EL-BM-078-R01	B
7	CONDUITS & FITTINGS	CUC-MAT-BV-EL-BM-079-R00	B
8	FIBER OPTIC NETWORK	CUC-MAT-BV-EL-BM-056-R02	B
9	GATEYWAYS MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-062-R00	B

REFERENCE FOR ENGINEERING SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PHYSICAL I/O LIST	CUC-MAT-BV-EL-BM-040-R06	B
2	PLC & RIO Mechanical & Wiring diagram	CUC-MAT-BV-EL-BM-039-R04	B
3	P & ID	CUC-MAT-BV-EL-BM-083-R01	B
4	SYSTEM LAYOUT	CUC-MAT-BV-EL-BM-050-R02	B

7

LOCATION TAGS:

CTMW – COOLING TOWER MAKEUP WATER
SCHWS – SECONDARY CHILLED WATER SUPPLY
SCHWR – SECONDARY CHILLED WATER RETURN
SVCHWS – SECONDARY VAC CHILLED WATER SUPPLY
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CHWR – CHILLED WATER RETUREN
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CWS – CONDENSER WATER SUPPLY
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MHEXHS – MAIN HEAT EXCHANGER HOT SIDE SUPPLY
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GWT – GREY WATER TANK
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CUCFP – CUC FIRE PUMP
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WMP – WATER MIST PUMP
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CTBD – COOLING TOWER BLEED LINE
CTD – COOLING TOWER DRAIN
DWS – DOMESTIC WATER SUPPLY

GROUND, BASEMENT & BASEMENT MEZZANINE FLOOR INSTRUMENT TAGS:

01-RTU-BS-03
01-DPIT-CHW-01:08
01-TIT-CHWS-01:08
01-TIT-CHWR-01:08
01-FIT-PCHWS-01:02
01-FIT-PCHWR-01
01-MOV-CHWS-01:08
01-TIT-PCHWS-01
01-DPIT-CW-01:08
01-TIT-CWS-01:08
01-TIT-CWR-01:08
01-FIT-CTEW-01:02
01-FIT-CTLW-01:02
01-MOV-CWR-01:08
01-MOV-PCHWS-01:02
01-MOV-PCHWR-01:02
01-MOV-MCHWS-01
01-MOV-MVCWS-01
01-MOV-CHWBP-01:02
01-TIT-MCHWS-01
01-DPS-CHW-01:08
01-DPS-CW-01:08
01-PIT-MCHWS-01

01-RTU-BS-06
01-DPS-SCHW-01:08
01-PCV-SCHW-01:08
01-DPIT-CHW-09:16
01-TIT-CHWS-09:16
01-TIT-CHWR-09:16
01-FIT-PCHWS-03:04
01-FIT-PCHWR-02
01-MOV-CHWS-09:16
01-TIT-PCHWS-02
01-DPIT-CW-09:16
01-TIT-CWS-09:16
01-TIT-CWR-09:16
01-FIT-CTEW-03:04
01-FIT-CTLW-03:04
01-MOV-CWR-09:16
01-MOV-PCHWS-03:04
01-MOV-PCHWR-03:04
01-MOV-MCHWS-02
01-MOV-MVCWS-02
01-TIT-MCHWS-02
01-MOV-ECHWS-01:04
01-MOV-ECHWR-01:04
01-DPIT-ECHW-03
01-DPS-CHW-09:16
01-DPS-CW-09:16
01-DPS-SCHW-09:12
01-PCV-SCHW-09:12
01-PIT-MCHWS-02

01-RTU-BS-07
01-DPIT-CHW-17:24
01-TIT-CHWS-17:24
01-TIT-CHWR-17:24
01-FIT-PCHWS-05:06
01-MOV-CHWS-17:24
01-TIT-PCHWR-01
01-DPIT-CW-17:24
01-TIT-CWS-17:24
01-TIT-CWR-17:24
01-FIT-CTEW-05:06
01-FIT-CTLW-05:06
01-MOV-CWR-17:24
01-MOV-PCHWS-05:06
01-MOV-PCHWR-05:06
01-FIT-DEC-01
01-PIT-AC-01
01-PIT-CHWM-01
01-LIT-CHWM-01
01-FIT-CHWM-01
01-MOV-MCHWR-01
01-FIT-MCHWS-01
01-FIT-MCHWR-01
01-TIT-MCHWR-01
01-PIT-MCHWR-01
01-PIT-ET-01:10
01-MOV-MSVCHWR-01
01-FIT-CTMW-01
01-DPS-CHW-17:24
01-DPS-CW-17:24
01-DPS-WS-01:03
01-DPS-CHWM-01:03
01-DPS-BS-01:03
01-DPS-SSF-01:02
01-PS-CHWM-01

01-RTU-BS-9C
01-FIT-SVCHWR-01
01-MOV-SVCHWS-01
01-MOV-SVCHWR-01
01-MOV-SVCHWS-02
01-MOV-SVCHWR-02
01-TIT-SVCHWS-01
01-TIT-SVCHWR-01
01-DPIT-MSVCSW-01
01-DPIT-MHEXH-01:02
01-MOV-HEXCS-01:04
01-TIT-HEXHS-01:04
01-TIT-HEXHR-01:04
01-TIT-MHEXHS-01
01-TIT-MHEXHR-01
01-PIT-HEXET-01
01-TIT-MHEXCS-01
01-TIT-MHEXCR-01
01-FIT-MHEXCS-01
01-PIT-MHEXHS-01
01-PIT-MHEXCR-01
01-FIT-MHEXCR-01
01-TIT-MSVCHWS-01
01-TIT-MSVCHWR-01
01-BTU-MSVCHWR-01
01-DPIT-MCHW-01:02
01-DPS-SCHW-17:20
01-DPS-HEXCHW-01:05
01-PCV-SCHW-17:20

01-RTU-BS-10
01-TIT-PCHWR-02
01-MOV-PCHWS-07:08
01-MOV-PCHWR-07:08
01-FIT-DEC-02
01-PIT-CHWM-02
01-PIT-AC-02
01-LIT-CHWM-02
01-FIT-CHWM-02
01-MOV-MCHWR-02
01-FIT-MCHWS-02
01-FIT-MCHWR-02
01-TIT-MCHWR-02
01-PIT-MCHWR-02
01-PIT-ET-11:20
01-MOV-MSVCHWR-02
01-DPS-WS-04:06
01-DPS-CHWM-04:06
01-PS-CHWM-02
01-DPS-BS-04:06
01-DPS-SSF-03:04

dar al-handasah shair and partners
CODE 1: APPROVED
CODE 2: APPROVED AS NOTED WORK MAY PROCEED SUBJECT TO INCORPORATION OF ENDORSED COMMENTS
CODE 3: RESUBMIT FOR APPROVAL WORK MAY NOT PROCEED
CODE 4: REJECTED
By: MM Date: 25/10/2017
Approval shall not relieve Contractor of any of his liabilities under the contract or constitute authorization of any change to Contract documents. Contractor is responsible for dimensions, quantities and coordination with other trades.

TORQUE AUTOMATION SYS.
CERTIFIED DRAWING BY TORQUE
DATE: 21/12/2014
TORQUE Automation Systems
P.O.Box: 12178, Sharjah,
UAE TEL: 00971 6 5579973,
FAX: 00971 6 5579974

المملكة العربية السعودية
وزارة التعليم العالي
Ministry of Higher Education

مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

Client:
KING ABDULLAH BIN ABDULAZIZ PROJECT THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

Consultant:
dar al-handasah shair and partners

NOTES:

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5) RTU PANELS INSTALLATION DETAILS REFER TO DRAWING#CUC-SD-SA-C03-GN-0001-R00
6) RTU PANELS COMMUNICATION BLOCK DIAGRAM REFER TO DRAWING # CUC-SD-SA-C08-GN-1000-R00
7) REFER TO SUBMITTAL TABLE FOR MATERIAL SUBMITTAL APPROVAL & ENGINEERING SUBMITTAL APPROVAL

RTU TAGGING SCHEME
XX-XXXX-XXXX-YY:YY — SERIAL NUMBER, FLOOR TAG, RTU / PLC, BUILDING TAG

INSTRUMENTS TAGGING SCHEME
XX-XXXX-XXXX-YY:YY — NO. OF EACH INSTRUMENT, LOCATION TAG, EQUIPMENT TAG, BUILDING TAG

BLDG KEY PLAN

COORDINATION TABLE

	ARCH.	STRUC.	HVAC.	PLUM.	F.F.	ELEC.
DATE			09/02/14	09/02/14	09/02/14	09/02/14
INITIAL			A.T	H.R	M.S	Q.S

SHOP DRAWINGS REFS. :

1	UCH-SD-PP-M02-BM-1014-R03	7	CUC-SD-SA-C02-BM-1250-R03
2	UCH-SD-ER-E02-BM-1014-R03		
3	UCH-SD-MH-M02-BM-1014-R00		
4	UCH-SD-MH-M02-BM-1110-R00		
5	UCH-SD-MP-M02-BM-1014-R00		
6	UCH-SD-MF-M02-BM-1014-R00		

DESIGN DRAWINGS REFS. :

1	S09077-01D-TD-GN-MH-601-R01	9	S09077-01D-TD-GN-MH-620:621-R00
2	S09077-01D-TD-GN-MH-602:603-R02		
3	S09077-01D-TD-GN-MH-604:605-R03		
4	S09077-01D-TD-GN-MH-606:607-R02		
5	S09077-01D-TD-GN-MH-608:610-R01		
6	S09077-01D-TD-GN-MH-611:612-R00		
7	S09077-01D-TD-GN-MH-613:616-R02		
8	S09077-01D-TD-GN-MH-617:619-R00		

Rev.	Description	Dwn. By	Chk. By	Date
4	REPLY THE COMMENTS	AA	MR	21/07/16
3	SUBMITTED FOR APPROVAL.	AA	MR	21/12/14
2	SUBMITTED FOR APPROVAL.	WM	MR	13/07/14
1	SUBMITTED FOR APPROVAL.	NA	MH	24/03/14
0	SUBMITTED FOR APPROVAL.	NA	MH	10/02/14

MAIN CONTRACTOR:
مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

SUB CONTRACTOR:
INMA
شركة إنماء المرافق للمقاولات
INMA UTILITIES CONTRACTING CO.

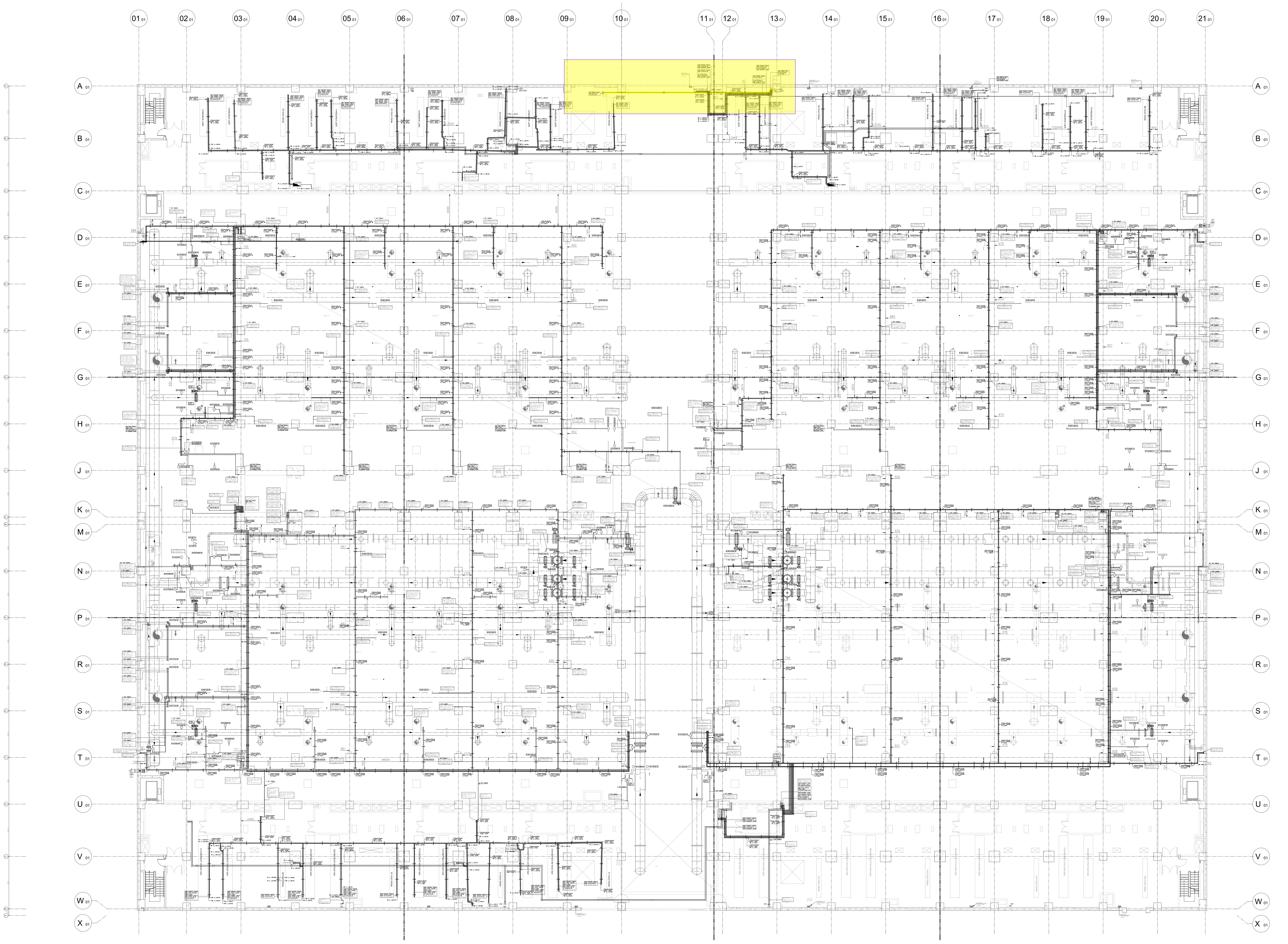
E & I CONTRACTOR:
TORQUE Automation Systems
P.O.Box: 12178, Sharjah,
UAE TEL: 00971 6 5579973,
FAX: 00971 6 5579974

PROJECT TITLE:
CENTRAL UTILITY COMPLEX & UTILITY TUNNEL

SHOP DRAWING TITLE :
CHILLER PLANT BUILDING
Basement Mezzanine Floor Process SCADA Cable Routing General layout

Drawing No.
CUC-SD-SA-C02-BM-1220

Scale	Date	Drawn By	Checked By	Approved By	Rev. No.
1:200	21/07/16	AA	MR	AS	4



FOR ASBUILT

LAYOUT SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONTROL CABLE		(RTU)REMOTE TERMINAL UNIT
	POWER CABLE		PARTITIONED CABLE TRUNK
	PROFIBUS DP CABLE		RGS CONDUIT
	PROFIBUS PA CABLE		EMT CONDUIT
	CABLE TRUNK SUPPORT		STAINLESS STEEL TUBE

LOCATION TAGS:

CTMW – COOLING TOWER MAKEUP WATER
SCHWS – SECONDARY CHILLED WATER SUPPLY
SCHWR – SECONDARY CHILLED WATER RETURN
SVCHWS – SECONDARY VAC CHILLED WATER SUPPLY
SVCHWR – SECONDARY VAC CHILLED WATER RETURN
STW – STORM WATER
CHW – CHILLED WATER
CHWS – CHILLED WATER SUPPLY
CHWR – CHILLED WATER RETUREN
PCHWS – PRIMARY CHILLED WATER SUPPLY
PCHWR – PRIMARY CHILLED WATER RETURN
MCHWS – MAIN CHILLED WATER SUPPLY
MCHWR – MAIN CHILLED WATER RETURN
CW – CONDENSER WATER
CWS – CONDENSER WATER SUPPLY
CWR – CONDENSER WATER RETURN
CTEW – COOLING TOWER ENTERING WATER
CTLW – COOLING TOWER LEAVING WATER
ECHW – EMEREGENCY CHILLED WATER
ECHWS – EMEREGENCY CHILLED WATER SUPPLY
ECHWR – EMEREGENCY CHILLED WATER RETURN
DEC – DECOUPLER
AC – AIR COMPRESSOR
CHWM – CHILLED WATER MAKE– UP
MCHWS – MAIN CHILLED WATER SUPPLY
MCHWR – MAIN CHILLED WATER RETURN
ET – EXPANSION TANK
SCHW – SECONDARY CHILLED WATER
HEXCHW – HEAT EXCHANGER CHILLED WATER
MHEXH – MAIN HEAT EXCHANGER HOT SIDE
HEXCS – HEAT EXCHANGER COOLED SIDE SUPPLY
HEXHS – HEAT EXCHANGER HOT SIDE SUPPLY
HEXHR – HEAT EXCHANGER HOT SIDE RETURN
MHEXHS – MAIN HEAT EXCHANGER HOT SIDE SUPPLY
MHEXHR – MAIN HEAT EXCHANGER HOT SIDE RETURN
HEXET – HEAT EXCHANGER EXPANSION TANK
MHEXCS – MAIN HEAT EXCHANGER COLD SIDE SUPPLY
MHEXCR – MAIN HEAT EXCHANGER COLD SIDE RETURN
SSF – SIDE STREAM FILTERS
BS – BASKET STRAINER
CTB – COOLING TOWER BASIN
CTBL – COOLING TOWER BASIN LEVEL LOW
CTBH – COOLING TOWER BASIN LEVEL HIGH
MDWS – MAIN DOMESTIC WATER SUPPLY
GWPU – GREY WATER PRESSURIZING UNITS
GWT – GREY WATER TANK
PFP – PIAZZA FIRE PUMP
CUCFP – CUC FIRE PUMP
HHFP – HOLY HARM FIRE PUMP
IRP – IRRIGATION PUMPS
WMP – WATER MIST PUMP
WT – WATER TANK
JF – JET FAN
RMCHWS – RIGHT WING MAIN CHW SUPPLY
RMCHWR – RIGHT WING MAIN CHW RETURN
RHWT – RECEIVING HEDA WATER TANK
GWSL – GREY WATER SUPPLY LINE
MCHW – MAIN CHILLED WATER
TWES – TREATED WATER EFFLUENT SUPPLY
MSVCHWS – MAIN VAC SECONDARY CHILLED WATER SUPPLY
MSVCHWR – MAIN VAC SECONDARY CHILLED WATER RETURN
CTBD – COOLING TOWER BLEED LINE
CTD – COOLING TOWER DRAIN
DWS – DOMESTIC WATER SUPPLY

GROUND,BASEMENT & BASEMENT MEZZANINE FLOOR INSTRUMENT TAGS:

01-RTU-BS-03

01-DPIT-CHW-01:08
01-TIT-CHWS-01:08
01-TIT-CHWR-01:08
01-FIT-PCHWS-01:02
01-FIT-PCHWR-01
01-MOV-CHWS-01:08
01-TIT-PCHWS-01
01-DPIT-CW-01:08
01-TIT-CWS-01:08
01-TIT-CWR-01:08
01-FIT-CTEW-01:02
01-FIT-CTLW-01:02
01-MOV-CWR-01:08
01-MOV-PCHWS-01:02
01-MOV-PCHWR-01:02
01-MOV-MCHWS-01
01-MOV-MVCWS-01
01-MOV-CHWBP-01:02
01-TIT-MCHWS-01
01-DPS-CHW-01:08
01-DPS-CW-01:08
01-PIT-MCHWS-01

01-RTU-BS-06

01-DPS-SCHW-01:08
01-PCV-SCHW-01:08
01-DPIT-CHW-09:16
01-TIT-CHWS-09:16
01-TIT-CHWR-09:16
01-FIT-PCHWS-03:04
01-FIT-PCHWR-02
01-MOV-CHWS-09:16
01-TIT-PCHWS-02
01-DPIT-CW-09:16
01-TIT-CWS-09:16
01-TIT-CWR-09:16
01-FIT-CTEW-03:04
01-FIT-CTLW-03:04
01-MOV-CWR-09:16
01-MOV-PCHWS-03:04
01-MOV-PCHWR-03:04
01-MOV-MCHWS-02
01-MOV-MVCWS-02
01-TIT-MCHWS-02
01-MOV-ECHWS-01:04
01-MOV-ECHWR-01:04
01-DPIT-ECHW-03
01-DPS-CHW-09:16
01-DPS-CW-09:16
01-DPS-SCHW-09:12
01-PCV-SCHW-09:12
01-PIT-MCHWS-02

01-RTU-BS-07

01-DPIT-CHW-17:24
01-TIT-CHWS-17:24
01-TIT-CHWR-17:24
01-FIT-PCHWS-05:06
01-MOV-CHWS-17:24
01-TIT-PCHWR-01
01-DPIT-CW-17:24
01-TIT-CWS-17:24
01-TIT-CWR-17:24
01-FIT-CTEW-05:06
01-FIT-CTLW-05:06
01-MOV-CWR-17:24
01-MOV-PCHWS-05:06
01-MOV-PCHWR-05:06
01-FIT-DEC-01
01-PIT-AC-01
01-PIT-CHWM-01
01-LIT-CHWM-01
01-FIT-CHWM-01
01-MOV-MCHWR-01
01-FIT-MCHWS-01
01-FIT-MCHWR-01
01-TIT-MCHWR-01
01-PIT-MCHWR-01
01-PIT-ET-01:10
01-MOV-MSVCHWR-01
01-FIT-CTMW-01
01-DPS-CHW-17:24
01-DPS-CW-17:24
01-DPS-WS-01:03
01-DPS-CHWM-01:03
01-DPS-BS-01:03
01-DPS-SSF-01:02
01-PS-CHWM-01

01-RTU-BS-9C

01-FIT-SVCHWR-01
01-MOV-SVCHWS-01
01-MOV-SVCHWR-01
01-MOV-SVCHWS-02
01-MOV-SVCHWR-02
01-TIT-SVCHWS-01
01-TIT-SVCHWR-01
01-DPIT-MSVCSW-01
01-DPIT-MHEXH-01:02
01-MOV-HEXCS-01:04
01-TIT-HEXHS-01:04
01-TIT-HEXHR-01:04
01-TIT-MHEXHS-01
01-TIT-MHEXHR-01
01-PIT-HEXET-01
01-TIT-MHEXCS-01
01-TIT-MHEXCR-01
01-FIT-MHEXCS-01
01-PIT-MHEXHS-01
01-PIT-MHEXCR-01
01-FIT-MHEXCR-01
01-TIT-MSVCHWS-01
01-TIT-MSVCHWR-01
01-BTU-MSVCHWR-01
01-DPIT-MCHW-01:02
01-DPS-SCHW-17:20
01-DPS-HEXCHW-01:05
01-PCV-SCHW-17:20

01-RTU-BS-10

01-TIT-PCHWR-02
01-MOV-PCHWS-07:08
01-MOV-PCHWR-07:08
01-FIT-DEC-02
01-PIT-CHWM-02
01-PIT-AC-02
01-LIT-CHWM-02
01-FIT-CHWM-02
01-MOV-MCHWR-02
01-FIT-MCHWS-02
01-FIT-MCHWR-02
01-TIT-MCHWR-02
01-PIT-MCHWR-02
01-PIT-ET-11:20
01-MOV-MSVCHWR-02
01-DPS-WS-04:06
01-DPS-CHWM-04:06
01-PS-CHWM-02
01-DPS-BS-04:06
01-DPS-SSF-03:04

AS - BUILT DRAWING
CHECED AND CERTIFIED BY CONTRACTOR REPRESENTATIVE
SIGNATURE: [signature] DATE: 16/11/24
NAME : Engr.Sajjad Hussain .
VERIFIED BY CONSULTANT REPRESENTATIVE
SIGNATURE: DATE: .
NAME .

NOTES:

1) SCADA NETWORK SLEEVES ARE CONSIDERED FOR LINKING BETWEEN BUILDINGS FLOORS & SCADA RISER WILL BE SUBMITTED.
2) ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
3) FOR RTU/PLC WIRING PLEASE REFER TO SUBMITTAL # CUC-MAT-BV-EL-BM-039-R03.
4) REFER TO ENGINEERING SUBMITTALS FOR P&ID, INSTRUMENTS HOOK-UP INSTRUMENTS LIST, CABLE SCHEDULE, OVERALL SYSTEM LAYOUT.
5) RTU PANELS INSTALLATION DETAILS REFER TO DRAWING#CUC-SD-SA-C03-GN-0001-R00
6) RTU PANELS COMMUNICATION BLOCK DIAGRAM REFER TO DRAWING # CUC-SD-SA-C08-GN-1000-R00

RELATED DOCUMENTS

NO.	WIR NO.	REV	DATE
01	SHE-CUC-EL-08861	0	23-01-2025
02	SHE-CUC-EL-08862	0	23-01-2025
03	SHE-CUC-EL-08863	0	23-01-2025
04	SHE-CUC-EL-08873	0	25-01-2025
05	SHE-CUC-EL-08882	0	25-01-2025

RELATED MATERIALS

NO.	NAME.	SUBMITAL NO.	STATUS
01	CUC-MAT-BV-EL-BM-032	PLC & SCADA MATERIAL SUBMITTAL	APPROVED
02	CUC-MAT-BV-EL-BM-045	INSTRUMENTS MATERIAL	APPROVED
03	CUC-MAT-BV-EL-BM-044	CONTROL CABLES MATERIAL SUBMITTAL	APPROVED
04	CUC-MAT-BV-EL-BM-051	TRUNKING & TRUNKS ACCESSORIES	APPROVED
05	CUC-MAT-BV-EL-BM-055	COMM. CABLE MATERIAL SUBMITTAL	APPROVED
06	CUC-MAT-BV-EL-BM-078	INSTRUMENTS SS TUBES & FITTINGS	APPROVED
07	CUC-MAT-BV-EL-BM-079	CONDUITS & FITTINGS	APPROVED
08	CUC-MAT-BV-EL-BM-056	FIBER OPTIC NETWORK	APPROVED
09	CUC-MAT-BV-EL-BM-062	GATEYWAYS MATERIAL SUBMITTAL	APPROVED
10	CUC-MAT-BV-EL-BM-040	MATERIAL SUBMITTAL DESCRIPTION	APPROVED
11	CUC-MAT-BV-EL-BM-039	PLC & RIO MECHANICAL & WIRING DIAGRAM	APPROVED
12	CUC-MAT-BV-EL-BM-083	P & ID	APPROVED
13	CUC-MAT-BV-EL-BM-050	SYSTEM LAYOUT	APPROVED

QUANTITY SURVEY

NO.	NAME.	QUANTITY	DATE

S.B.G. COORDINATION

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

R E V I S I O N

NO.	REVISION DESCRIPTION	ACTION CODE	DATE	BY
00	ISSUED FOR APPROVAL		16-11-24	NK

SHOP & DESIGN DRAWING REFERENCES

NO.	DWG. No.	DRAWING TITLE	REV.	DATE
01	CUC-SD-SA-C02-BM-1220	Basement Mezz Process SCADA Cable Routing General Layout	04	21-07-2016
02	CUC-SD-SA-C02-BM-1221	Basement Mezz Process SCADA Cable Routing Part 01 of 12	04	21-07-2016
03	CUC-SD-SA-C02-BM-1222	Basement Mezz Process SCADA Cable Routing Part 02 of 12	04	21-07-2016
04	CUC-SD-SA-C02-BM-1223	Basement Mezz Process SCADA Cable Routing Part 03 of 12	04	21-07-2016
05	CUC-SD-SA-C02-BM-1224	Basement Mezz Process SCADA Cable Routing Part 04 of 12	04	21-07-2016
06	CUC-SD-SA-C02-BM-1225	Basement Mezz Process SCADA Cable Routing Part 05 of 12	04	21-07-2016
07	CUC-SD-SA-C02-BM-1226	Basement Mezz Process SCADA Cable Routing Part 06 of 12	04	21-07-2016
08	CUC-SD-SA-C02-BM-1227	Basement Mezz Process SCADA Cable Routing Part 07 of 12	04	21-07-2016
09	CUC-SD-SA-C02-BM-1228	Basement Mezz Process SCADA Cable Routing Part 08 of 12	04	21-07-2016
10	CUC-SD-SA-C02-BM-1229	Basement Mezz Process SCADA Cable Routing Part 09 of 12	04	21-07-2016
11	CUC-SD-SA-C02-BM-1230	Basement Mezz Process SCADA Cable Routing Part 10 of 12	04	21-07-2016
12	CUC-SD-SA-C02-BM-1231	Basement Mezz Process SCADA Cable Routing Part 11 of 12	04	21-07-2016
13	CUC-SD-SA-C02-BM-1232	Basement Mezz Process SCADA Cable Routing Part 12 of 12	04	21-07-2016

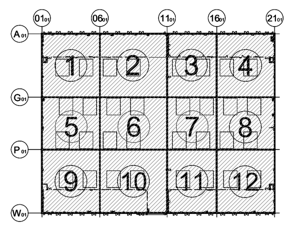
LETTERS & RFI'S REFERENCES

NO.	DOC. No.	DOCUMENT DESCRIPTION	DATE
01			
02			

DAR REVIEWER

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

KEY PLAN



PROJECT: المشروع

التوسعة السعودية الثالثة للمسجد الحرام
والعناصر المرتبطة بها

THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

CLIENT: المالك

وزارة المالية
Ministry of Finance

DESIGN & CONSULTANT: الاستشارى

dar
making progress together

GENERAL CONTRACTOR: المقاول العام

مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

SUB CONTRACTOR:

AVANCEON
Tomorrow's solutions, today.

ZONE NAME: وصف المبنى

CHILLER PLANT

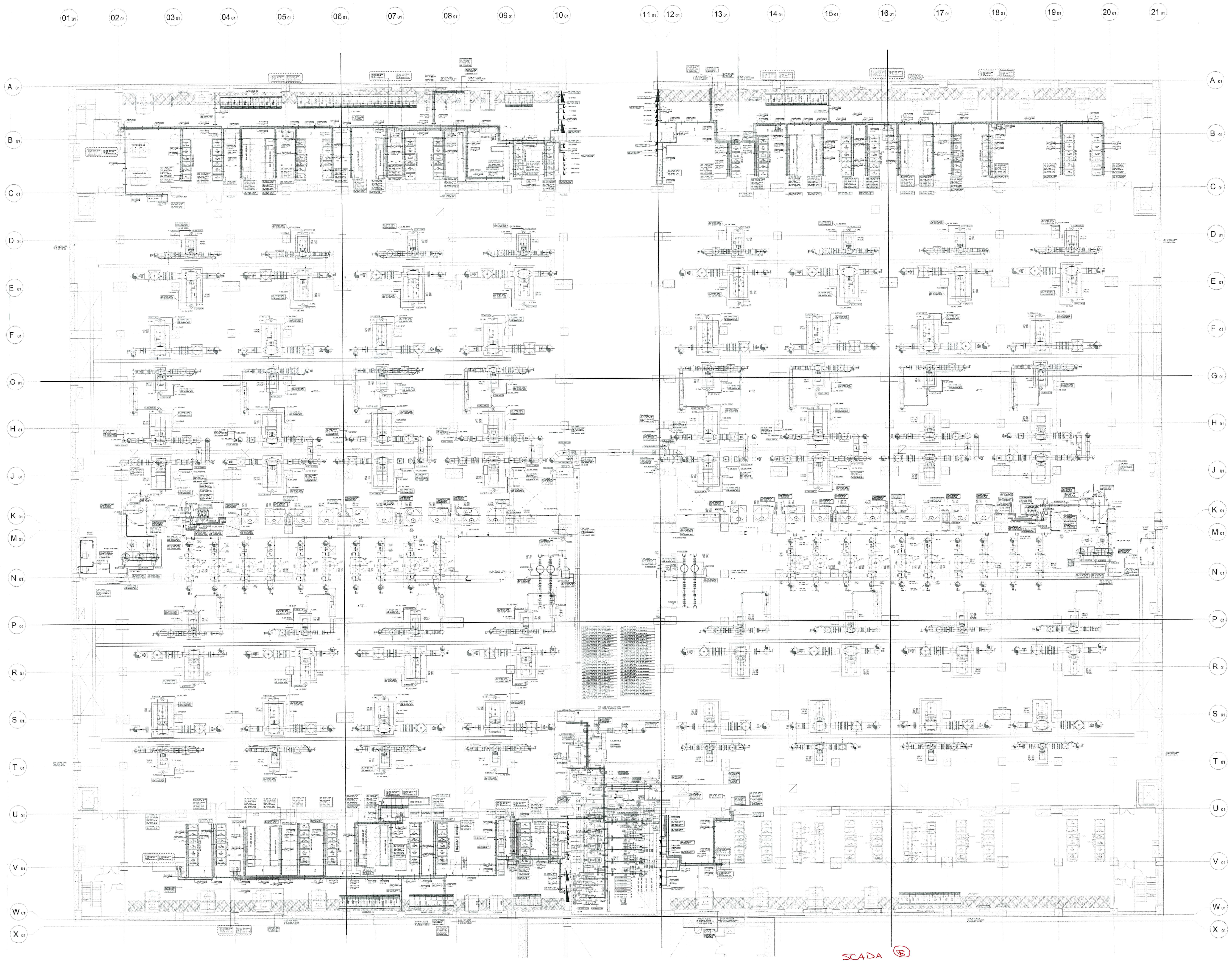
DRAWING TITLE: اسم اللوحة

AS-BUILT CHILLER PLANT BASEMENT MEZZANINE PROCESS SCADA CABLE ROUTING GENERAL LAYOUT

DRAWN BY:	N.Khaliq	DATE	16/11/2024
CHECKED BY:	S.Hussain	SCALE	NTS
REVIEWED BY:	H.Shahbaz	SHEET SIZE	A0
APPROVED BY:	A.Saeed		

DRAWING & TRANSMITTAL No.

BUILDING NAME	DWG TYPE	TRADE	SUB TRADE	LEVEL	DRAWING NUMBER	REV. No.
CUC	AB	SA	C02	BM	1220	00



SCADA (B)

Refer to SCADA General comments on DWG #
CUC-SD-SA-C02-00-0302

25/10/2017

LC Comments :-

** Refer to Comments on DWG #
CUC-SD-SA-C02-00-0302-01.

18/10/2017

*** Electrical Comments :- Action Code (B)

1- Hence, there is no marked-up clouds indicating the modifications, Any modification done without the marked-up clouds will be the contractor responsibility and the consequent remedy work shall be done without any extra cost to the client.

2- Code (B) is granted subject to sort out our Comments. The Comments will be inspected by site engineer.

3- Refer to previous revision general Comments indicated at S.D# (CUC-SD-SA-C02-B1-1120-R03).

4- Refer to comments given to partial plans S.D#
(CUC-SD-SA-C02-B1-1121-R04) to
(CUC-SD-SA-C02-B1-1124-R04) and from S.D#
(CUC-SD-SA-C02-B1-1129-R04) to S.D#
(CUC-SD-SA-C02-B1-1131-R04)

18/10/2017

APPROVED MATERIAL SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PLC & SCADA MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-032-R01	B
2	INSTRUMENTS MATERIAL	CUC-MAT-BV-EL-BM-045-R07	B
3	CONTROL CABLES MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-044-R04	A
4	TRUNKING & TRUNKS ACCESSORIES	CUC-MAT-BV-EL-BM-051-R01	B
5	COMM. CABLE MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-055-R03	B
6	INSTRUMENTS SS TUBES & FITTINGS	CUC-MAT-BV-EL-BM-078-R01	B
7	CONDUITS & FITTINGS	CUC-MAT-BV-EL-BM-079-R00	B
8	FIBER OPTIC NETWORK	CUC-MAT-BV-EL-BM-056-R02	B
9	GATEYWAYS MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-062-R00	B

REFERENCE FOR ENGINEERING SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PHYSICAL I/O LIST	CUC-MAT-BV-EL-BM-040-R06	B
2	PLC & RIO Mechanical & Wiring diagram	CUC-MAT-BV-EL-BM-039-R04	B
3	P & ID	CUC-MAT-BV-EL-BM-083-R01	B
4	SYSTEM LAYOUT	CUC-MAT-BV-EL-BM-050-R02	B

TORQUE AUTOMATION SYS.

CERTIFIED DRAWING BY TORQUE
DATE: 21/12/2014

TORQUE Automation Systems
P.O.Box: 12178, Sharjah,
UAE TEL: 00971 6 5579973,
FAX: 00971 6 5579974

المملكة العربية السعودية

وزارة التعليم العالي
Ministry of Higher Education

مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

Client:
KING ABDULLAH BIN ABDULAZIZ PROJECT THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

Consultant:
dar al-handasah shair and partners

NOTES:
1) SCADA NETWORK SLEEVES ARE CONSIDERED FOR LINKING BETWEEN BUILDINGS FLOORS & SCADA RISER WILL BE SUBMITTED.
2) FOR CONTROL CABLE TRUNKS DETAILS REFER TO DRAWING # CUC-SD-SA-C02-B1-1140
3) ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4) FOR RTU/PLC WIRING PLEASE REFER TO SUBMITTAL # CUC-MAT-BV-EL-BM-039-R03.
5) REFER TO ENGINEERING SUBMITTALS FOR P&ID, INSTRUMENTS HOOK-UP INSTRUMENTS LIST, CABLE SCHEDULE, OVERALL SYSTEM LAYOUT.
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7) RTU PANELS COMMUNICATION BLOCK DIAGRAM REFER TO DRAWING # CUC-SD-SA-C08-GN-1000-R00
8) REFER TO SUBMITTAL TABLE FOR MATERIAL SUBMITTAL APPROVAL & ENGINEERING SUBMITTAL APPROVAL

BLDG KEY PLAN

1	2	3	4
5	6	7	8
9	10	11	12

COORDINATION TABLE

	ARCH.	STRUC.	HVAC.	PLUM.	F.F.	ELEC.
DATE			09/02/14	09/02/14	09/02/14	09/02/14
INITIAL			A.T	H.R	M.S	O.S

SHOP DRAWINGS REFS. :

1	UCH-SD-MF-M02-B1-1001-R00	7	CUC-SD-SA-C02-B1-1150-R03 → R04- Code (B/C)
2	UCH-SD-MP-M02-B1-1001-R00		
3	UCH-SD-PP-M02-B1-1001-R03		
4	UCH-SD-MH-M02-B1-1001-R00		
5	UCH-SD-MH-M02-B1-1097-R00		
6	UCH-SD-ER-E02-B1-1001-R04		

DESIGN DRAWINGS REFS. :

1	S09077-01D-TD-GN-MH-601-R01	9	S09077-01D-TD-GN-MH-620:621-R00
2	S09077-01D-TD-GN-MH-602:603-R02		
3	S09077-01D-TD-GN-MH-604:605-R03		
4	S09077-01D-TD-GN-MH-606:607-R02		
5	S09077-01D-TD-GN-MH-608:610-R01		
6	S09077-01D-TD-GN-MH-611:612-R00		
7	S09077-01D-TD-GN-MH-613:616-R02		
8	S09077-01D-TD-GN-MH-617:619-R00		

Rev.	Description	Dwn. By	Chk. By	Date
4	SUBMITTED FOR APPROVAL.	AA	MF	21/07/16
3	SUBMITTED FOR APPROVAL.	AA	MR	21/12/14
2	SUBMITTED FOR APPROVAL.	WM	MR	13/07/14
1	SUBMITTED FOR APPROVAL.	NA	MH	24/03/14
0	SUBMITTED FOR APPROVAL.	NA	MH	10/02/14

MAIN CONTRACTOR:
مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

SUB CONTRACTOR:
INMA
شركة إنماء المرافق للمقاولات
INMA UTILITIES CONTRACTING CO.

E & I CONTRACTOR:
TORQUE Automation Systems
P.O.Box: 12178, Sharjah,
UAE TEL: 00971 6 5579973,
FAX: 00971 6 5579974

PROJECT TITLE:
CENTRAL UTILITY COMPLEX & UTILITY TUNNEL

SHOP DRAWING TITLE :
CHILLER PLANT
BASEMENT FLOOR PROCESS SCADA CABLE ROUTING GENERAL LAYOUT

Drawing No.
CUC-SD-SA-C02-B1-1120

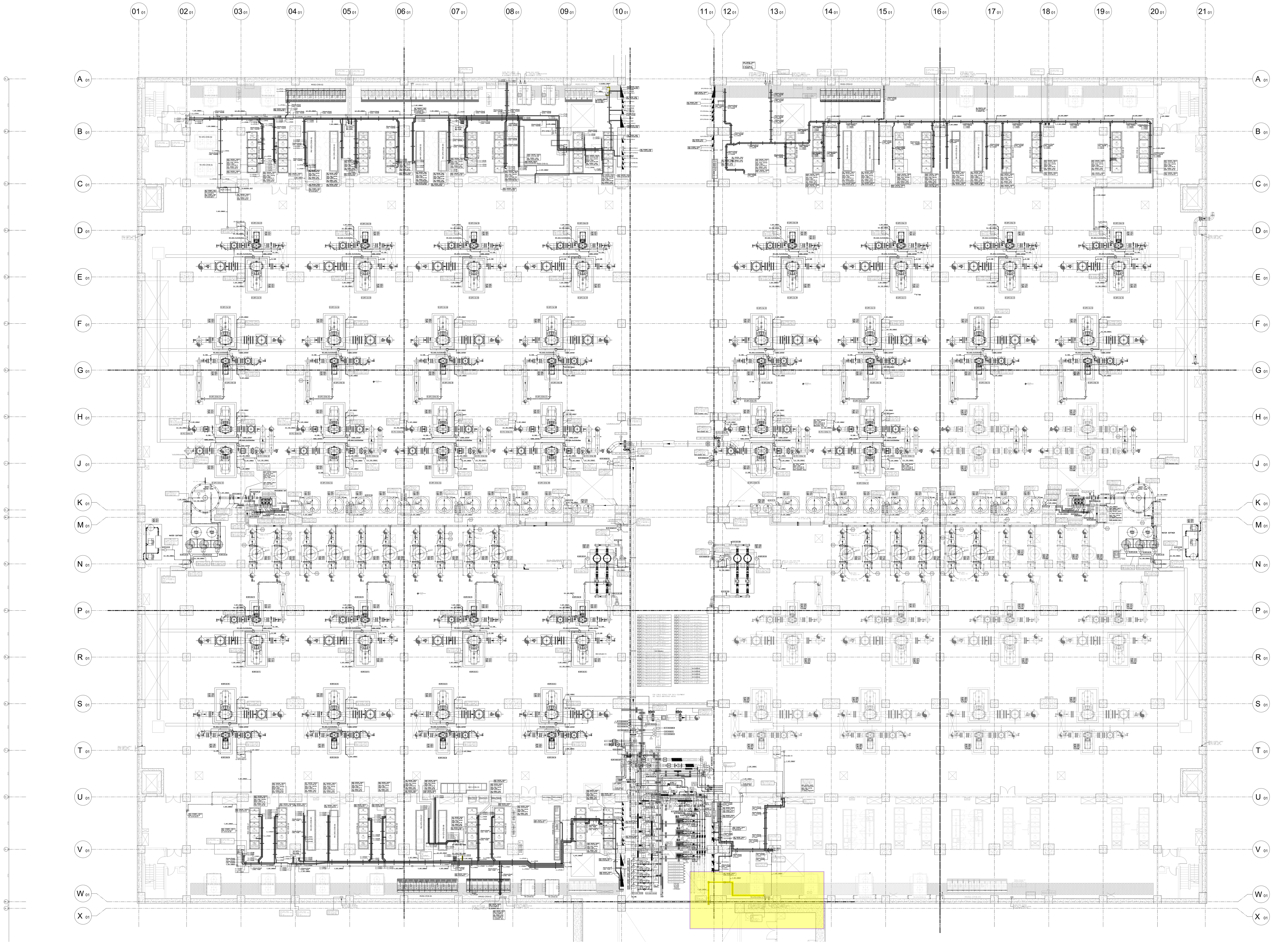
Scale	Date	Drawn By	Checked By	Approved By	Rev. No.
1:200(A0)	21/07/16	AA	MF	AS	4

dar al-handasah shair and partners

- CODE 1: APPROVED
- CODE 2: APPROVED AS NOTED — WORK MAY PROCEED SUBJECT TO INCORPORATION OF ENDORSED COMMENTS
- CODE 3: RESUBMIT FOR APPROVAL — WORK MAY NOT PROCEED
- CODE 4: REJECTED

By: MM Date: 25/10/2017

Approval shall not relieve Contractor of any of his liabilities under the contract or constitute authorization of any change to Contract documents. Contractor is responsible for dimensions, quantities and coordination with other trades.



NOTES:

1) SCADA NETWORK SLEEVES ARE CONSIDERED FOR LINKING BETWEEN BUILDINGS FLOORS & SCADA RISER WILL BE SUBMITTED.
2) FOR CONTROL CABLE TRUNKS DETAILS REFER TO DRAWING # CUC-SD-SA-C02-B1-1140
3) ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4) FOR RTU/PLC WIRING PLEASE REFER TO SUBMITTAL # CUC-MAT-BV-EL-BM-039-R03.
5) REFER TO ENGINEERING SUBMITTALS FOR P&ID, INSTRUMENTS HOOK-UP
6) RTU PANELS INSTALLATION DETAILS REFER TO DRAWING#CUC-SD-SA-C03-GN-0001-R00
7) RTU PANELS COMMUNICATION BLOCK DIAGRAM REFER TO DRAWING # CUC-SD-SA-C08-GN-1000-R00

RELATED DOCUMENTS

NO.	WIR NO.	REV	DATE
01	SHE-CUC-EL-8885	0	22-04-2025
02	SHE-CUC-EL-8896	0	22-04-2025
03	SHE-CUC-EL-8897	0	22-04-2025

RELATED MATERIALS

NO.	NAME.	SUBMITAL NO.	STATUS
01	CUC-MAT-BV-EL-BM-032	PLC & SCADA MATERIAL SUBMITTAL	APPROVED
02	CUC-MAT-BV-EL-BM-045	INSTRUMENTS MATERIAL	APPROVED
03	CUC-MAT-BV-EL-BM-044	CONTROL CABLES MATERIAL SUBMITTAL	APPROVED
04	CUC-MAT-BV-EL-BM-051	TRUNKING & TRUNKS ACCESSORIES	APPROVED
05	CUC-MAT-BV-EL-BM-055	COMM. CABLE MATERIAL SUBMITTAL	APPROVED
06	CUC-MAT-BV-EL-BM-078	INSTRUMENTS SS TUBES & FITTINGS	APPROVED
07	CUC-MAT-BV-EL-BM-079	CONDUITS & FITTINGS	APPROVED
08	CUC-MAT-BV-EL-BM-056	FIBER OPTIC NETWORK	APPROVED
09	CUC-MAT-BV-EL-BM-062	GATEYWAYS MATERIAL SUBMITTAL	APPROVED
10	CUC-MAT-BV-EL-BM-040	MATERIAL SUBMITTAL DESCRIPTION	APPROVED
11	CUC-MAT-BV-EL-BM-039	PLC & RIO MECHANICAL & WIRING DIAGRAM	APPROVED
12	CUC-MAT-BV-EL-BM-083	P & ID	APPROVED
13	CUC-MAT-BV-EL-BM-050	SYSTEM LAYOUT	APPROVED

QUANTITY SURVEY

NO.	NAME.	QUANTITY	DATE

S.B.G. COORDINATION

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

R E V I S I O N

NO.	REVISION DESCRIPTION	ACTION CODE	DATE	BY
00	ISSUED FOR APPROVAL		12-11-24	NK

SHOP & DESIGN DRAWING REFERENCES

NO.	DWG. No.	DRAWING TITLE	REV.	DATE
01	CUC-SD-SA-C02-B1-1120	Basement Floor Process SCADA Cable Routing General Layout	04	21-07-2016
02	CUC-SD-SA-C02-B1-1121	Basement Floor Process SCADA Cable Routing Part 01 of 12	04	21-07-2016
03	CUC-SD-SA-C02-B1-1122	Basement Floor Process SCADA Cable Routing Part 02 of 12	04	21-07-2016
04	CUC-SD-SA-C02-B1-1123	Basement Floor Process SCADA Cable Routing Part 03 of 12	04	21-07-2016
05	CUC-SD-SA-C02-B1-1124	Basement Floor Process SCADA Cable Routing Part 04 of 12	04	21-07-2016
06	CUC-SD-SA-C02-B1-1125	Basement Floor Process SCADA Cable Routing Part 05 of 12	04	21-07-2016
07	CUC-SD-SA-C02-B1-1126	Basement Floor Process SCADA Cable Routing Part 06 of 12	04	21-07-2016
08	CUC-SD-SA-C02-B1-1127	Basement Floor Process SCADA Cable Routing Part 07 of 12	04	21-07-2016
09	CUC-SD-SA-C02-B1-1128	Basement Floor Process SCADA Cable Routing Part 08 of 12	04	21-07-2016
10	CUC-SD-SA-C02-B1-1129	Basement Floor Process SCADA Cable Routing Part 09 of 12	04	21-07-2016
11	CUC-SD-SA-C02-B1-1130	Basement Floor Process SCADA Cable Routing Part 10 of 12	04	21-07-2016
12	CUC-SD-SA-C02-B1-1131	Basement Floor Process SCADA Cable Routing Part 11 of 12	04	21-07-2016
13	CUC-SD-SA-C02-B1-1132	Basement Floor Process SCADA Cable Routing Part 12 of 12	04	21-07-2016

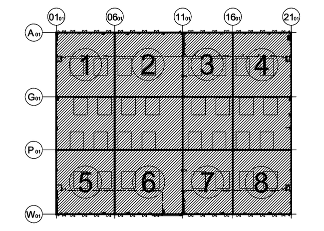
LETTERS & RFI'S REFERENCES

NO.	DOC. No.	DOCUMENT DESCRIPTION	DATE
01			
02			

DAR REVIEWER

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

KEY PLAN



PROJECT: المشروع

التوسعة السعودية الثالثة للمسجد الحرام والعناصر المرتبطة بها

THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

CLIENT: المالك

وزارة المالية
Ministry of Finance

DESIGN & CONSULTANT: الاستشارى

dar
making progress together

GENERAL CONTRACTOR: المقاول العام

مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

SUB CONTRACTOR:

AVANCEON
Tomorrow's solutions, today.

ZONE NAME: وصف المبنى

CHILLER PLANT

DRAWING TITLE: اسم اللوحة

AS-BUILT CHILLER PLANT
BASEMENT FLOOR PROCESS SCADA
CABLE ROUTING GENERAL LAYOUT

DRAWN BY:	N.Khaliq		DATE	12/11/2024
CHECKED BY:	S.Hussain		SCALE	NTS
REVIEWED BY:	H.Shahbaz		SHEET SIZE	A0
APPROVED BY:	A.Saeed			

DRAWING & TRANSMITTAL No.

BUILDING NAME	DWG TYPE	TRADE	SUB TRADE	LEVEL	DRAWING NUMBER	REV. No.
CUC	AB	SA	C02	B1	1120	00

LOCATION TAGS:

CTMW - COOLING TOWER MAKEUP WATER
SCHWS - SECONDARY CHILLED WATER SUPPLY
SCHWR - SECONDARY CHILLED WATER RETURN
SVCHWS - SECONDARY VAC CHILLED WATER SUPPLY
SVCHWR - SECONDARY VAC CHILLED WATER RETURN
STW - STORM WATER
CHW - CHILLED WATER
CHWS - CHILLED WATER SUPPLY
CHWR - CHILLED WATER RETUREN
PCHWS - PRIMARY CHILLED WATER SUPPLY
PCHWR - PRIMARY CHILLED WATER RETURN
MCHWS - MAIN CHILLED WATER SUPPLY
MCHWR - MAIN CHILLED WATER RETURN
CW - CONDENSER WATER
CWS - CONDENSER WATER SUPPLY
CWR - CONDENSER WATER RETURN
CTEW - COOLING TOWER ENTERING WATER
CTLW - COOLING TOWER LEAVING WATER
ECHW - EMEREGENCY CHILLED WATER
ECHWS - EMEREGENCY CHILLED WATER SUPPLY
ECHWR - EMEREGENCY CHILLED WATER RETURN
DEC - DECOUPLER
AC - AIR COMPRESSOR
CHWM - CHILLED WATER MAKE- UP
MCHWS - MAIN CHILLED WATER SUPPLY
MCHWR - MAIN CHILLED WATER RETURN
ET - EXPANSION TANK
SCHW - SECONDARY CHILLED WATER
HEXCHW - HEAT EXCHANGER CHILLED WATER
MHEXH - MAIN HEAT EXCHANGER HOT SIDE
HEXCS - HEAT EXCHANGER COOLED SIDE SUPPLY
HEXHS - HEAT EXCHANGER HOT SIDE SUPPLY
HEXHR - HEAT EXCHANGER HOT SIDE RETURN
MHEXHS - MAIN HEAT EXCHANGER HOT SIDE SUPPLY
MHEXHR - MAIN HEAT EXCHANGER HOT SIDE RETURN
HEXET - HEAT EXCHANGER EXPANSION TANK
MHEXCS - MAIN HEAT EXCHANGER COLD SIDE SUPPLY
MHEXCR - MAIN HEAT EXCHANGER COLD SIDE RETURN
SSF - SIDE STREAM FILTERS
BS - BASKET STRAINER
CTB - COOLING TOWER BASIN
CTBL - COOLING TOWER BASIN LEVEL LOW
CTBH - COOLING TOWER BASIN LEVEL HIGH
MDWS - MAIN DOMESTIC WATER SUPPLY
GWPU - GREY WATER PRESSURIZING UNITS
GWT - GREY WATER TANK
PFP - PIAZZA FIRE PUMP
CUCFP - CUC FIRE PUMP
HHFP - HOLY HARM FIRE PUMP
IRP - IRRIGATION PUMPS
WMP - WATER MIST PUMP
WT - WATER TANK
JF - JET FAN
RMCHWS - RIGHT WING MAIN CHW SUPPLY
RMCHWR - RIGHT WING MAIN CHW RETURN
RHWT - RECEIVING HEDA WATER TANK
GWSL - GREY WATER SUPPLY LINE
MCHW - MAIN CHILLED WATER
TWES - TREATED WATER EFFLUENT SUPPLY
MSVCHWS - MAIN VAC SECONDARY CHILLED WATER SUPPLY
MSVCHWR - MAIN VAC SECONDARY CHILLED WATER RETURN
CTBD - COOLING TOWER BLEED LINE
CTD - COOLING TOWER DRAIN
DWS - DOMESTIC WATER SUPPLY

GROUND,BASEMENT & BASEMENT MEZZANINE FLOOR INSTRUMENT TAGS:

01-RTU-BS-03

01-DPIT-CHW-01:08
01-TIT-CHWS-01:08
01-TIT-CHWR-01:08
01-FIT-PCHWS-01:02
01-FIT-PCHWR-01
01-MOV-CHWS-01:08
01-TIT-PCHWS-01
01-DPIT-CW-01:08
01-TIT-CWS-01:08
01-TIT-CWR-01:08
01-FIT-CTEW-01:02
01-FIT-CTLW-01:02
01-MOV-CWR-01:08
01-MOV-PCHWS-01:02
01-MOV-PCHWR-01:02
01-MOV-MCHWS-01
01-MOV-MVCWS-01
01-MOV-CWBP-01:02
01-TIT-MCHWS-01
01-DPS-CHW-01:08
01-DPS-CW-01:08
01-PIT-MCHWS-01

01-RTU-BS-06

01-DPS-SCHW-01:08
01-PCV-SCHW-01:08
01-DPIT-CHW-09:16
01-TIT-CHWS-09:16
01-TIT-CHWR-09:16
01-FIT-PCHWS-03:04
01-FIT-PCHWR-02
01-MOV-CHWS-09:16
01-TIT-PCHWS-02
01-DPIT-CW-09:16
01-TIT-CWS-09:16
01-TIT-CWR-09:16
01-FIT-CTEW-03:04
01-FIT-CTLW-03:04
01-MOV-CWR-09:16
01-MOV-PCHWS-03:04
01-MOV-PCHWR-03:04
01-MOV-MCHWS-02
01-MOV-MVCWS-02
01-TIT-MCHWS-02
01-MOV-ECHWS-01:04
01-MOV-ECHWR-01:04
01-DPIT-ECHW-03
01-DPS-CHW-09:16
01-DPS-CW-09:16
01-DPS-SCHW-09:12
01-PCV-SCHW-09:12
01-PIT-MCHWS-02

01-RTU-BS-07

01-DPIT-CHW-17:24
01-TIT-CHWS-17:24
01-TIT-CHWR-17:24
01-FIT-PCHWS-05:06
01-MOV-CHWS-17:24
01-TIT-PCHWR-01
01-DPIT-CW-17:24
01-TIT-CWS-17:24
01-TIT-CWR-17:24
01-FIT-CTEW-05:06
01-FIT-CTLW-05:06
01-MOV-CWR-17:24
01-MOV-PCHWS-05:06
01-MOV-PCHWR-05:06
01-FIT-DEC-01
01-PIT-AC-01
01-PIT-CHWM-01
01-LIT-CHWM-01
01-FIT-CHWM-01
01-MOV-MCHWR-01
01-FIT-MCHWS-01
01-FIT-MCHWR-01
01-TIT-MCHWR-01
01-PIT-MCHWR-01
01-PIT-ET-01:10
01-MOV-MSVCHWR-01
01-FIT-CTMW-01
01-DPS-CHW-17:24
01-DPS-CW-17:24
01-DPS-WS-01:03
01-DPS-CHWM-01:03
01-DPS-BS-01:03
01-DPS-SSF-01:02
01-PS-CHWM-01

01-RTU-BS-9C

01-FIT-SVCHWR-01
01-MOV-SVCHWS-01
01-MOV-SVCHWR-01
01-MOV-SVCHWS-02
01-MOV-SVCHWR-02
01-TIT-SVCHWS-01
01-TIT-SVCHWR-01
01-DPIT-MSVCSW-01
01-DPIT-MHEXH-01:02
01-MOV-HEXCS-01:04
01-TIT-HEXHS-01:04
01-TIT-HEXHR-01:04
01-TIT-MHEXHS-01
01-TIT-MHEXHR-01
01-PIT-HEXET-01
01-TIT-MHEXCS-01
01-TIT-MHEXCR-01
01-FIT-MHEXCS-01
01-PIT-MHEXHS-01
01-PIT-MHEXCR-01
01-FIT-MHEXCR-01
01-TIT-MSVCHWS-01
01-TIT-MSVCHWR-01
01-BTU-MSVCHWR-01
01-DPIT-MCHW-01:02
01-DPS-SCHW-17:20
01-DPS-HEXCHW-01:05
01-PCV-SCHW-17:20

01-RTU-BS-10

01-TIT-PCHWR-02
01-MOV-PCHWS-07:08
01-MOV-PCHWR-07:08
01-FIT-DEC-02
01-PIT-CHWM-02
01-PIT-AC-02
01-LIT-CHWM-02
01-FIT-CHWM-02
01-MOV-MCHWR-02
01-FIT-MCHWS-02
01-FIT-MCHWR-02
01-TIT-MCHWR-02
01-PIT-MCHWR-02
01-PIT-ET-11:20
01-MOV-MSVCHWR-02
01-DPS-WS-04:06
01-DPS-CHWM-04:06
01-PS-CHWM-02
01-DPS-BS-04:06
01-DPS-SSF-03:04

LAYOUT SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
——	CONTROL CABLE	⧅	(RTU)REMOTE TERMINAL UNIT
——	POWER CABLE	⇌	PARTITIONED CABLE TRUNK
——	PROFIBUS DP CABLE	━━	RGS CONDUIT
——	PROFIBUS PA CABLE	━━	EMT CONDUIT
•—•	CABLE TRUNK SUPPORT	——	STAINLESS STEEL TUBE

AS - BUILT DRAWING
CHECED AND CERTIFIED BY CONTRACTOR REPRESENTATIVE

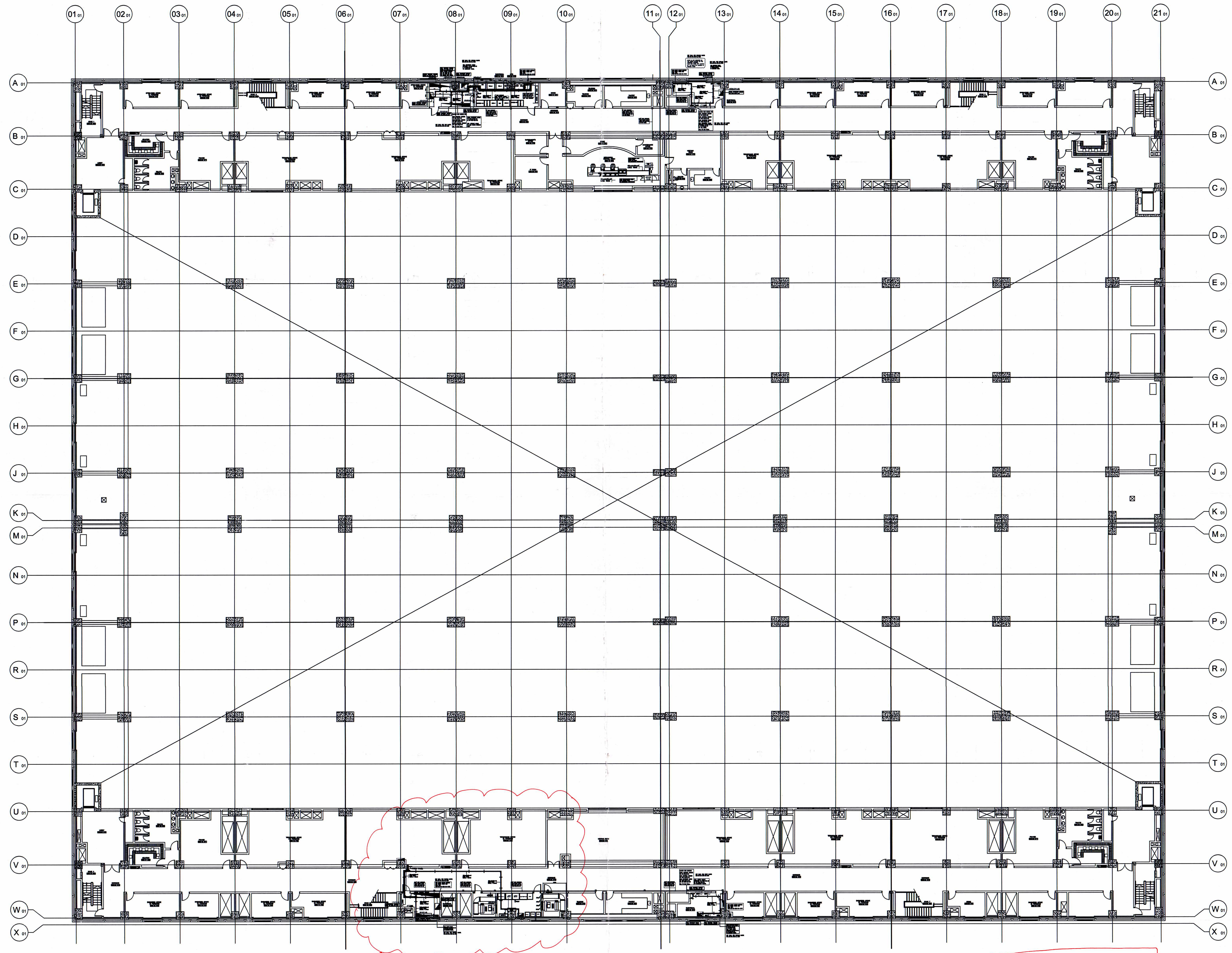
SIGNATURE: [signature] DATE: 12/11/24

NAME : Engr.Sajjad Hussain .

VERIFIED BY CONSULTANT REPRESENTATIVE

SIGNATURE: DATE: .

NAME .



Elcc (Repeated).
This part is still not submitted as per our previous revision comment; only part-2 is submitted under SD# CUC-SD-SA-C02-M1-1422-R04.

LC Comments: Code "B"
** Refer to previous Comment on previous Rev..
13/5/2018. Mtz

Elec (B)
- Refer to dwg comments.
- Refer to general comments given on SD# CUC-SD-SA-C02-BM-1221-R03
7/5/2018

APPROVED MATERIAL SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PLC & SCADA MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-032-R01	B
2	INSTRUMENTS MATERIAL	CUC-MAT-BV-EL-BM-045-R07	B
3	CONTROL CABLES MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-044-R04	A
4	TRUNKING & TRUNKS ACCESSORIES	CUC-MAT-BV-EL-BM-051-R01	B
5	COMM. CABLE MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-055-R03	B
6	INSTRUMENTS SS TUBES & FITTINGS	CUC-MAT-BV-EL-BM-078-R01	B
7	CONDUITS & FITTINGS	CUC-MAT-BV-EL-BM-079-R00	B
8	FIBER OPTIC NETWORK	CUC-MAT-BV-EL-BM-056-R02	B
9	GATEYWAYS MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-062-R00	B

REFERENCE FOR ENGINEERING SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PHYSICAL I/O LIST	CUC-MAT-BV-EL-BM-040-R06	B
2	PLC & RIO Mechanical & Wiring diagram	CUC-MAT-BV-EL-BM-039-R04	B
3	P & ID	CUC-MAT-BV-EL-BM-083-R01	B
4	SYSTEM LAYOUT	CUC-MAT-BV-EL-BM-050-R02	B

8

TORQUE AUTOMATION SYS.

CERTIFIED DRAWING BY TORQUE
DATE: 25/12/2014

TORQUE Automation Systems
P.O.Box: 12178, Sharjah, UAE TEL: 00971 6 5579973, FAX: 00971 6 5579974

المملكة العربية السعودية

مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

Client:
KING ABDULLAH BIN ABDULAZIZ PROJECT THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

Consultant:
dar al-handasah shair and partners

NOTES:
1) SCADA NETWORK SLEEVES ARE CONSIDERED FOR LINKING BETWEEN BUILDINGS FLOORS & SCADA RISER WILL BE SUBMITTED.
2) FOR CONTROL CABLE TRUNKS DETAILS REFER TO DRAWING # CUC-SD-SA-C02-M1-1440
3) ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4) FOR RTU/PLC WIRING PLEASE REFER TO SUBMITTAL # CUC-MAT-BV-EL-BM-039-R03.
5) REFER TO ENGINEERING SUBMITTALS FOR P&ID, INSTRUMENTS HOOK-UP INSTRUMENTS LIST, CABLE SCHEDULE, OVERALL SYSTEM LAYOUT.
6) RTU PANELS INSTALLATION DETAILS REFER TO DRAWING#CUC-SD-SA-C03-GN-0001-R00
7) RTU PANELS COMMUNICATION BLOCK DIAGRAM REFER TO DRAWING # CUC-SD-SA-C08-GN-1000-R00
8) REFER TO SUBMITTAL TABLE FOR MATERIAL SUBMITTAL APPROVAL & ENGINEERING SUBMITTAL APPROVAL

RTU TAGGING SCHEME
XX-XXXX-XXXX-YY:YY — SERIAL NUMBER, FLOOR TAG, RTU / PLC, BUILDING TAG

INSTRUMENTS TAGGING SCHEME
XX-XXXX-XXXX-YY:YY — NO. OF EACH INSTRUMENT, LOCATION TAG, EQUIPMENT TAG, BUILDING TAG

BUILDING TAGS:
WT: CUC-U/G WATER TANK
00: CUC-EXTERNAL WORKS
01: CUC-CHILLER PLANT
02: CUC-GENERATOR PLANT

PANEL TYPE:

EQUIPMENT TAGS:

LAYOUT SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONTROL CABLE		RTU/REMOTE TERMINAL UNIT
	POWER CABLE		PARTITIONED CABLE TRUNK
	PROFIBUS DP CABLE		RGS CONDUIT
	PROFIBUS PA CABLE		EMT CONDUIT
	CABLE TRUNK SUPPORT		STAINLESS STEEL TUBE

BLDG KEY PLAN

COORDINATION TABLE

	ARCH.	STRUC.	HVAC.	PLUM.	F.F.	ELEC.
DATE			09/02/14	09/02/14	09/02/14	09/02/14
INITIAL			A.T	H.R	M.S	Q.S

SHOP DRAWINGS REFS. :

1	UCH-SD-ER-E02-M1-1040-R03		
2	UCH-SD-MH-M02-M1-1040-R00		
3	UCH-SD-MH-M02-M1-1136-R00		
4	UCH-SD-MP-M02-M1-1040-R00		
5	UCH-SD-MF-M02-M1-1040-R00		

DESIGN DRAWINGS REFS. :

1	S09077-01D-TD-GN-MH-601-R01	9	S09077-01D-TD-GN-MH-620:621-R00
2	S09077-01D-TD-GN-MH-602:603-R02		
3	S09077-01D-TD-GN-MH-604:605-R03		
4	S09077-01D-TD-GN-MH-606:607-R02		
5	S09077-01D-TD-GN-MH-608:610-R01		
6	S09077-01D-TD-GN-MH-611:612-R00		
7	S09077-01D-TD-GN-MH-613:616-R02		
8	S09077-01D-TD-GN-MH-617:619-R00		

Rev.	Description	Dwn. By	Chk. By	Date
4	SUBMITTED FOR COORDINATION APPROV.	AA	MF	02/05/18
3	SUBMITTED FOR COORDINATION APPROV.	WM	MF	21/07/16
2	SUBMITTED FOR APPROVAL.	AA	MR	25/12/14
1	SUBMITTED FOR APPROVAL.	WM	MR	17/07/14
0	SUBMITTED FOR APPROVAL.	NA	MH	09/02/14

MAIN CONTRACTOR:
مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

SUB CONTRACTOR:
INMA
شركة إنماء المرافق للمقاولات
INMA UTILITIES CONTRACTING CO.

E & I CONTRACTOR:
TORQUE Automation Systems
P.O.Box: 12178, Sharjah, UAE TEL: 00971 6 5579973, FAX: 00971 6 5579974

PROJECT TITLE:
CENTRAL UTILITY COMPLEX & UTILITY TUNNEL

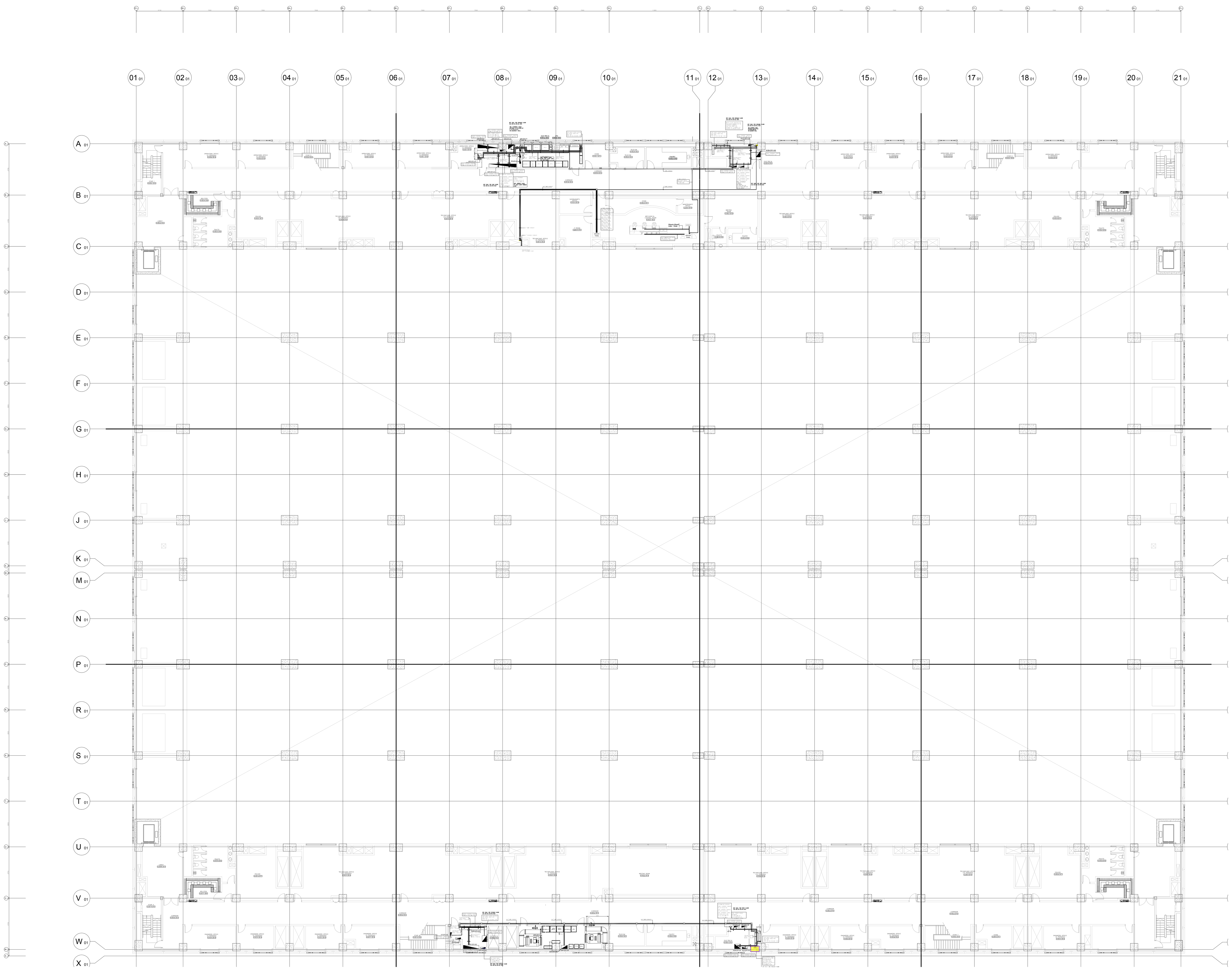
SHOP DRAWING TITLE:
CHILLER PLANT
1ST MEZZ. FLOOR PROCESS SCADA CABLE ROUTING LAYOUT

Drawing No.
CUC-SD-SA-C02-M1-1420

Scale	Date	Drawn By	Checked By	Approved By	Rev. No.
1:200 (A0)	02/05/18	AA	MF	AS	4

LAYOUT SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONTROL CABLE		(RTU)REMOTE TERMINAL UNIT
	POWER CABLE		PARTITIONED CABLE TRUNK
	PROFIBUS DP CABLE		RGS CONDUIT
	PROFIBUS PA CABLE		EMT CONDUIT
	CABLE TRUNK SUPPORT		STAINLESS STEEL TUBE



AS - BUILT DRAWING
CHECED AND CERTIFIED BY
CONTRACTOR REPRESENTATIVE
SIGNATURE: DATE: 19/04/25
NAME : Engr.Sajjad Hussain .
VERIFIED BY CONSULTANT
REPRESENTATIVE
SIGNATURE: DATE: .
NAME .

FOR ASBUILT

NOTES:

1) SCADA NETWORK SLEEVES ARE CONSIDERED FOR LINKING BETWEEN BUILDINGS FLOORS & SCADA RISER WILL BE SUBMITTED.
2) ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
3) FOR RTU/PLC WIRING PLEASE REFER TO SUBMITTAL # CUC-MAT-BV-EL-BM-039-R03.
4) REFER TO ENGINEERING SUBMITTALS FOR P&ID, INSTRUMENTS HOOK-UP INSTRUMENTS LIST, CABLE SCHEDULE, OVERALL SYSTEM LAYOUT.
5) RTU PANELS INSTALLATION DETAILS REFER TO DRAWING#CUC-SD-SA-C03-GN-0001-R00
6) RTU PANELS COMMUNICATION BLOCK DIAGRAM REFER TO DRAWING # CUC-SD-SA-C08-GN-1000-R00

RELATED DOCUMENTS

NO.	WIR NO.	REV	DATE
01	SHE-CUC-EL-8722	0	28-04-2025
02	SHE-CUC-EL-8723	0	28-04-2025
03	SHE-CUC-EL-8724	0	28-04-2025

RELATED MATERIALS

NO.	NAME.	SUBMITAL NO.	STATUS
01	CUC-MAT-BV-EL-BM-032	PLC & SCADA MATERIAL SUBMITTAL	APPROVED
02	CUC-MAT-BV-EL-BM-045	INSTRUMENTS MATERIAL	APPROVED
03	CUC-MAT-BV-EL-BM-044	CONTROL CABLES MATERIAL SUBMITTAL	APPROVED
04	CUC-MAT-BV-EL-BM-051	TRUNKING & TRUNKS ACCESSORIES	APPROVED
05	CUC-MAT-BV-EL-BM-055	COMM. CABLE MATERIAL SUBMITTAL	APPROVED
06	CUC-MAT-BV-EL-BM-078	INSTRUMENTS SS TUBES & FITTINGS	APPROVED
07	CUC-MAT-BV-EL-BM-079	CONDUITS & FITTINGS	APPROVED
08	CUC-MAT-BV-EL-BM-056	FIBER OPTIC NETWORK	APPROVED
09	CUC-MAT-BV-EL-BM-062	GATEYWAYS MATERIAL SUBMITTAL	APPROVED
10	CUC-MAT-BV-EL-BM-040	MATERIAL SUBMITTAL DESCRIPTION	APPROVED
11	CUC-MAT-BV-EL-BM-039	PLC & RIO MECHANICAL & WIRING DIAGRAM	APPROVED
12	CUC-MAT-BV-EL-BM-083	P & ID	APPROVED
13	CUC-MAT-BV-EL-BM-050	SYSTEM LAYOUT	APPROVED

QUANTITY SURVEY

NO.	NAME.	QUANTITY	DATE

S.B.G. COORDINATION

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

R E V I S I O N

NO.	REVISION DESCRIPTION	ACTION CODE	DATE	BY
00	ISSUED FOR APPROVAL		19-04-25	NK

SHOP & DESIGN DRAWING REFERENCES

NO.	DWG. No.	DRAWING TITLE	REV.	DATE
01	CUC-SD-SA-C02-M1-1420	First Mezz Process SCADA Cable Routing General Layout	04	02-05-2018
02	CUC-SD-SA-C02-M1-1421	First Mezz Process SCADA Cable Routing Part 01 of 08	04	02-05-2018
03	CUC-SD-SA-C02-M1-1422	First Mezz Process SCADA Cable Routing Part 02 of 08	04	02-05-2018
04	CUC-SD-SA-C02-M1-1423	First Mezz Process SCADA Cable Routing Part 03 of 08	04	02-05-2018
05	CUC-SD-SA-C02-M1-1424	First Mezz Process SCADA Cable Routing Part 04 of 08	04	02-05-2018
06	CUC-SD-SA-C02-M1-1425	First Mezz Process SCADA Cable Routing Part 05 of 08	04	02-05-2018
07	CUC-SD-SA-C02-M1-1426	First Mezz Process SCADA Cable Routing Part 06 of 08	04	02-05-2018
08	CUC-SD-SA-C02-M1-1427	First Mezz Process SCADA Cable Routing Part 07 of 08	04	02-05-2018
09	CUC-SD-SA-C02-M1-1428	First Mezz Process SCADA Cable Routing Part 08 of 08	04	02-05-2018

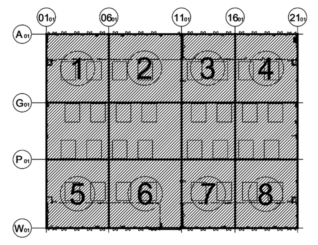
LETTERS & RFI'S REFERENCES

NO.	DOC. No.	DOCUMENT DESCRIPTION	DATE
01			
02			

DAR REVIEWER

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

KEY PLAN



PROJECT: المشروع

التوسعة السعودية الثالثة للمسجد الحرام
والعناصر المرتبطة بها

THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

CLIENT: المالك

وزارة المالية
Ministry of Finance

DESIGN & CONSULTANT: الاستشارى

dar
making progress together

GENERAL CONTRACTOR: المقاول العام

مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

SUB CONTRACTOR:

AVANCEON
Tomorrow's solutions, today.

ZONE NAME: وصف المبنى

CHILLER PLANT

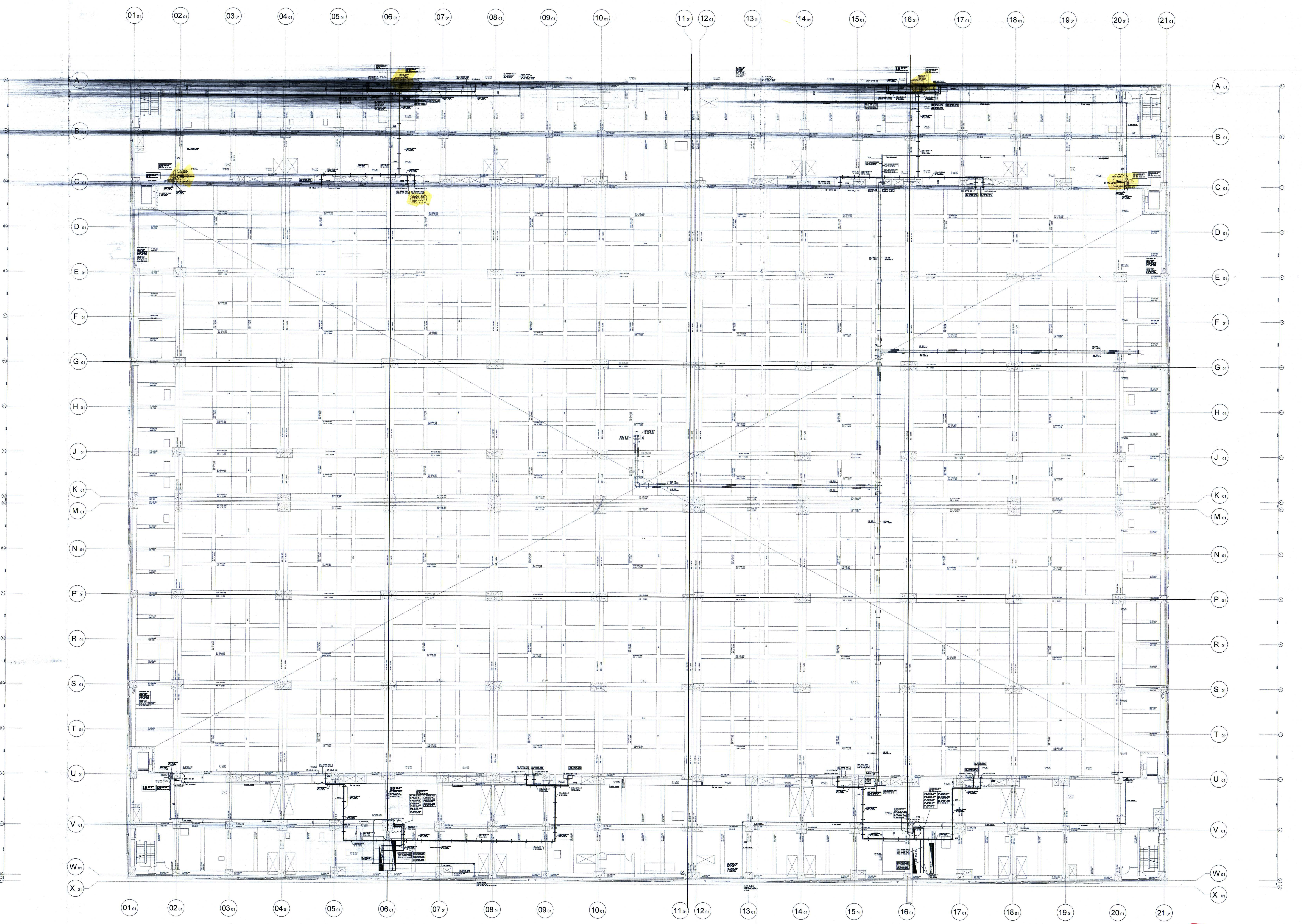
DRAWING TITLE: اسم اللوحة

AS-BUILT CHILLER PLANT
FIRST MEZZ PROCESS SCADA
CABLE ROUTING GENERAL LAYOUT

DRAWN BY:	N.Khaliq		DATE	19/04/2025
CHECKED BY:	S.Hussain		SCALE	NTS
REVIEWED BY:	H.Shahbaz		SHEET SIZE	A0
APPROVED BY:	A.Saeed			

DRAWING & TRANSMITTAL No.

BUILDING NAME	DWG TYPE	TRADE	SUB TRADE	LEVEL	DRAWING NUMBER	REV. No.
CUC	AB	SA	C02	M1	1420	00



المملكة العربية السعودية

وزارة التعليم العالي
Ministry of Higher Education

مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

Client:

KING ABDULLAH BIN ABDULAZIZ PROJECT THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

Consultant:

dar al-handasah
shair and partners

NOTES:

1) SCADA NETWORK SLEEVES ARE CONSIDERED FOR LINKING BETWEEN BUILDINGS FLOORS & SCADA RISER WILL BE SUBMITTED.
2) FOR CONTROL CABLE TRUNKS DETAILS REFER TO DRAWING # CUC-SD-SA-C02-M3-1640
3) ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4) FOR RTU/PLC WIRING PLEASE REFER TO SUBMITTAL # CUC-MAT-BV-EL-BM-039-R03.
5) REFER TO ENGINEERING SUBMITTALS FOR P&ID, INSTRUMENTS HOOK-UP INSTRUMENTS LIST, CABLE SCHEDULE, OVERALL SYSTEM LAYOUT.
6) RTU PANELS INSTALLATION DETAILS REFER TO DRAWING#CUC-SD-SA-C03-GN--0001-R00
7) RTU PANELS COMMUNICATION REFER TO SYSTEM LAYOUT SUBMITTAL # CUC-MAT-BV-EL-BM-050-R02
8) REFER TO SUBMITTAL TABLE FOR MATERIAL SUBMITTAL APPROVAL & ENGINEERING SUBMITTAL APPROVAL

LOCATION TAGS:

CTMW – COOLING TOWER MAKE UP WATER
SCHWS – SECONDARY CHILLED WATER SUPPLY
SCHWR – SECONDARY CHILLED WATER RETURN
SVCHWS – SECONDARY VAC CHILLED WATER SUPPLY
SVCHWR – SECONDARY VAC CHILLED WATER RETURN
STW – STORM WATER
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CHWS – CHILLED WATER SUPPLY
CHWR – CHILLED WATER RETUREN
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PCHWR – PRIMARY CHILLED WATER RETURN
MCHWS – MAIN CHILLED WATER SUPPLY
MCHWR – MAIN CHILLED WATER RETURN
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CWS – CONDENSER WATER SUPPLY
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CTLW – COOLING TOWER LEAVING WATER
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ECHWS – EMEREGENCY CHILLED WATER SUPPLY
ECHWR – EMEREGENCY CHILLED WATER RETURN
DEC – DECOUPLER
AC – AIR COMPRESSOR
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MCHWS – MAIN CHILLED WATER SUPPLY
MCHWR – MAIN CHILLED WATER RETURN
ET – EXPANSION TANK
SCHW – SECONDARY CHILLED WATER
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MHEXH – MAIN HEAT EXCHANGER HOT SIDE
HEXCS – HEAT EXCHANGER COOLED SIDE SUPPLY
HEXHS – HEAT EXCHANGER HOT SIDE SUPPLY
HEXHR – HEAT EXCHANGER HOT SIDE RETURN
MHEXHS – MAIN HEAT EXCHANGER HOT SIDE SUPPLY
MHEXHR – MAIN HEAT EXCHANGER HOT SIDE RETURN
HEXET – HEAT EXCHANGER EXPANSION TANK
MHEXCS – MAIN HEAT EXCHANGER COLD SIDE SUPPLY
MHEXCR – MAIN HEAT EXCHANGER COLD SIDE RETURN
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CTB – COOLING TOWER BASIN
CTBL – COOLING TOWER BASIN LEVEL LOW
CTBH – COOLING TOWER BASIN LEVEL HIGH
MDWS – MAIN DOMESTIC WATER SUPPLY
GWPU – GREY WATER PRESSURIZING UNITS
GWT – GREY WATER TANK
PFP – PIAZZA FIRE PUMP
CUCFP – CUC FIRE PUMP
HHFP – HOLY HARM FIRE PUMP
IRP – IRRIGATION PUMPS
WMP – WATER MIST PUMP
WT – WATER TANK
JF – JET FAN
RMCHWS – RIGHT WING MAIN CHW SUPPLY
RMCHWR – RIGHT WING MAIN CHW RETURN
RHWT – RECEIVING HEDA WATER TANK
GWSL – GREY WATER SUPPLY LINE
MCHW – MAIN CHILLED WATER
TWES – TREATED WATER EFFLUENT SUPPLY
MSVCHWS – MAIN VAC SECONDARY CHILLED WATER SUPPLY
MSVCHWR – MAIN VAC SECONDARY CHILLED WATER RETURN
CTBD – COOLING TOWER BLEED LINE
CTD – COOLING TOWER DRAIN
DWS – DOMESTIC WATER SUPPLY

ROOF FLOOR INSTRUMENT TAGS:

01–RTU–M3–01

01–TIT–CTEW–01:02
01–TIT–CTLW–01:02
01–MOV–CTEW–01:08
01–MOV–CTLW–01:04
01–MOV–CTMW–01:04
01–MOV–CTD–01:04
01–LIT–CTB–01:04
01–FIT–CTMW–01:02
01–FIT–CTBD–01:02
01–LS–CTBH–01:04
01–LS–CTBL–01:04

01–RTU–M3–04

01–TIT–CTEW–03:04
01–TIT–CTLW–03:04
01–MOV–CTEW–09:16
01–MOV–CTLW–05:08
01–MOV–CTMW–05:08
01–MOV–CTD–05:08
01–LIT–CTB–05:08
01–FIT–CTMW–03:04
01–FIT–CTBD–03:04
01–MOV–ECHWS–05
01–MOV–ECHWR–05
01–DPIT–ECHW–01
01–TIT–ECHWS–01
01–MOV–ECHWS–01
01–FIT–ECHWS–01
01–TIT–ECHWR–01
01–PIT–EET–01
01–DPS–ECHW–01:02
01–LS–CTBH–05:08
01–LS–CTBL–05:08

01–RTU–M3–05

01–TIT–CTEW–05:06
01–TIT–CTLW–05:06
01–MOV–CTEW–17:24
01–MOV–CTLW–09:12
01–MOV–CTMW–09:12
01–MOV–CTD–09:12
01–LIT–CTB–09:12
01–FIT–CTMW–05:06
01–FIT–CTBD–05:06
01–MOV–ECHWS–06
01–MOV–ECHWR–06
01–DPIT–ECHW–02
01–LS–CTBH–09:12
01–LS–CTBL–09:12

RTU TAGGING SCHEME

XX–XXXX–XXXX–YY:YY
SERIAL NUMBER
FLOOR TAG
RTU / PLC
BUILDING TAG

BUILDING TAGS:

WT: CUC–U/G WATER TANK
00: CUC–EXTERNAL WORKS
01: CUC–CHILLER PLANT
02: CUC–GENERATOR PLANT
03: CUC–SERVICE BUILDING
04: CUC–CENTRAL WASTE HANDLING PLANT
05: CUC–FIRE PUMP STATION
06: CUC–UTILITY TUNNEL –T4
09: CUC–TRAINING CENTER BUILDING

PANEL TYPE:

RTU: REMOTE TERMINAL UNIT
PLC: PROGRAMABLE LOGIC CONTROLLER

BUILDING TAGS:

B2: SECOND BASEMENT FLOOR
B1: FIRST BASEMENT FLOOR
BS: BASEMENT FLOOR
GR: GROUND FLOOR
M1: FIRST MEZZANINE
M2: SECOND MEZZANINE
M3: THIRD MEZZANINE
1: FIRST FLOOR
2: SECOND FLOOR
3: THIRD FLOOR
4: FOURTH FLOOR
5: FIFTH FLOOR
RL: ROOF LEVEL
EC: ELECTRICAL CULVERT
UT: UTILITY TUNNEL

INSTRUMENTS TAGGING SCHEME

XX–XXXX–XXXX–YY:YY
NO. OF EACH INSTRUMENT
LOCATION TAG
EQUIPMENT TAG
BUILDING TAG

BUILDING TAGS:

WT: CUC–U/G WATER TANK
00: CUC–EXTERNAL WORKS
01: CUC–CHILLER PLANT
02: CUC–GENERATOR PLANT
03: CUC–SERVICE BUILDING
04: CUC–CENTRAL WASTE HANDLING PLANT
05: CUC–FIRE PUMP STATION
06: CUC–UTILITY TUNNEL –T4
09: CUC–TRAINING CENTER BUILDING

EQUIPMENT TAGS:

MOV– MOTORIZED VALVE
LIT– LEVEL INDICATING & TRANSIMITTER
TIT– TEMPERTURE INDICATING & TRANSIMITTER
FIT– FLOW INDICATING & TRANSIMITTER
DPIT– DIFFERENTIAL PRESSURE INDICATING & TRANSIMITTER
PIT– PRESSURE INDICATING & TRANSIMITTER
DPS– DIFFERENTIAL PRESSURE SWITCH
PS– PRESSURE SWITCH
BTU– BRITISH THERMAL UNIT
PCV– Pressure Control Valve

LAYOUT SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONTROL CABLE		(RTU)REMOTE TERMINAL UNIT
	POWER CABLE		PARTITIONED CABLE TRUNK
	PROFIBUS DP CABLE		RGS CONDUIT
	PROFIBUS PA CABLE		EMT CONDUIT
	CABLE TRUNK SUPPORT		STAINLESS STEEL TUBE

BLDG KEY PLAN

COORDINATION TABLE

	ARCH.	STRUC.	HVAC.	PLUM.	F.F.	ELEC.
DATE			09/02/14	09/02/14	09/02/14	09/02/14
INITIAL			A.T	H.R	M.S	Q.S

SHOP DRAWINGS REFS. :

1	UCH-SD-ER-E02-M3-1074-R03		
2	UCH-SD-MH-M02-M3-1066-R03		
3	UCH-SD-MH-M02-M3-1162-R00		
4	UCH-SD-MP-M02-M3-1066-R00		
5	UCH-SD-MF-M02-M3-1066-R00		

DESIGN DRAWINGS REFS. :

1	S09077-01D-TD-GN-MH-601-R01	9	S09077-01D-TD-GN-MH-620:621-R00
2	S09077-01D-TD-GN-MH-602:603-R02		
3	S09077-01D-TD-GN-MH-604:605-R03		
4	S09077-01D-TD-GN-MH-606:607-R02		
5	S09077-01D-TD-GN-MH-608:610-R01		
6	S09077-01D-TD-GN-MH-611:612-R00		
7	S09077-01D-TD-GN-MH-613:616-R02		
8	S09077-01D-TD-GN-MH-617:619-R00		

Rev.	Description	Dwn. By	Chk. By	Date
3	SUBMITTED FOR APPROVAL.	AA	MF	21/07/16
2	SUBMITTED FOR APPROVAL.	AA	MR	28/04/15
1	SUBMITTED FOR APPROVAL.	WM	MR	17/07/14
0	SUBMITTED FOR APPROVAL.	NA	MH	09/02/14

MAIN CONTRACTOR:

مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP

SUB CONTRACTOR:

INMA
شركة إنماء المرافق للمقاولات
INMA UTILITIES CONTRACTING CO.

E & I CONTRACTOR:

TORQUE Automation Systems
P.O.Box: 12178, Sharjah,
UAE TEL: 00971 6 5579973,
FAX: 00971 6 5579974

PROJECT TITLE:

CENTRAL UTILITY COMPLEX & UTILITY TUNNEL

SHOP DRAWING TITLE :

CHILLER PLANT
THIRD MEZZ. FLOOR PROCESS SCADA CABLE ROUTING LAYOUT

Drawing No. CUC-SD-SA-C02-M3-1620

Scale	Date	Drawn By	Checked By	Approved By	Rev. No.
1:200 (A0)	21/07/16	AA	MF	AS	3

APPROVED MATERIAL SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PLC & SCADA MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-032-R01	B
2	INSTRUMENTS MATERIAL	CUC-MAT-BV-EL-BM-045-R07	B
3	CONTROL CABLES MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-044-R04	A
4	TRUNKING & TRUNKS ACCESSORIES	CUC-MAT-BV-EL-BM-051-R01	B
5	COMM. CABLE MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-055-R03	B
6	INSTRUMENTS SS TUBES & FITTINGS	CUC-MAT-BV-EL-BM-078-R01	B
7	CONDUITS & FITTINGS	CUC-MAT-BV-EL-BM-079-R00	B
8	FIBER OPTIC NETWORK	CUC-MAT-BV-EL-BM-056-R02	B
9	GATEYWAYS MATERIAL SUBMITTAL	CUC-MAT-BV-EL-BM-062-R00	B

REFERENCE FOR ENGINEERING SUBMITTAL

ITEM	MATERIAL SUBMITTAL DESCRIPTION	SUBMITTAL REFERENCE	CODE
1	PHYSICAL I/O LIST	CUC-MAT-BV-EL-BM-040-R06	B
2	PLC & RIO Mechanical & Wiring diagram	CUC-MAT-BV-EL-BM-039-R04	B
3	P & ID	CUC-MAT-BV-EL-BM-083-R01	B
4	SYSTEM LAYOUT	CUC-MAT-BV-EL-BM-050-R02	B

8

LC Comments:-
** Refer to Comments on DWG# CUC-SD-SA-C02-BM-1221-04.
23/10/2017

Electrical action
Code B
M. Elfangal
16/10/2017

* Refer to General Comments on the Previous revision.
* Refer to the Comments on the Part Plans / layouts
* Refer to the Comments on the Dwg Ref:
(CUC-SD-SA-C02-BM-1228-R04)

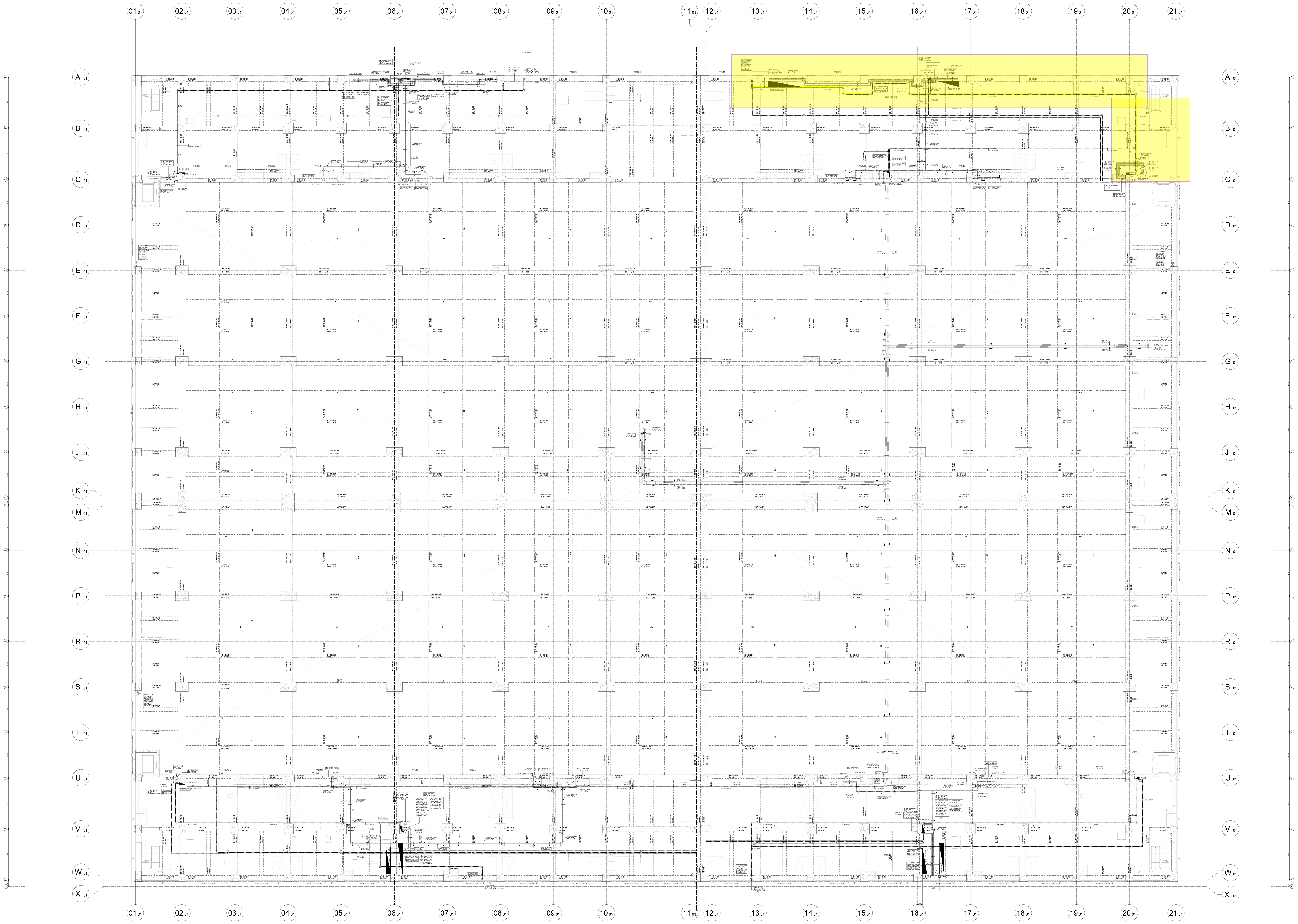
SCADA B
Refer to SCADA General Comments on Dwg#
CUC-SD-SA-C02-BM-1221
25/10/2017

dar al-handasah shair and partners
CODE 1: APPROVED
CODE 2: APPROVED AS NOTED WORK MAY PROCEED SUBJECT TO INCORPORATION OF ENDORSED COMMENTS
CODE 3: RESUBMIT FOR APPROVAL WORK MAY NOT PROCEED
CODE 4: REJECTED
By: MM Date: 25/10/2017
Approval shall not relieve Contractor of any of his liabilities under the contract or constitute authorization of any change to Contract documents. Contractor is responsible for dimensions, quantities and coordination with other trades.

TORQUE AUTOMATION SYS.

CERTIFIED DRAWING BY TORQUE
DATE: 25/12/2014

TORQUE Automation Systems
P.O.Box: 12178, Sharjah,
UAE TEL: 00971 6 5579973,
FAX: 00971 6 5579974



FOR ASBUILT

LOCATION TAGS:

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CUCFP – CUC FIRE PUMP
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RMCHWR – RIGHT WING MAIN CHW RETURN
RHWT – RECEIVING HEDA WATER TANK
GWSL – GREY WATER SUPPLY LINE
MCHW – MAIN CHILLED WATER
TWES – TREATED WATER EFFLUENT SUPPLY
MSVCHWS – MAIN VAC SECONDARY CHILLED WATER SUPPLY
MSVCHWR – MAIN VAC SECONDARY CHILLED WATER RETURN
CTBD – COOLING TOWER BLEED LINE
CTD – COOLING TOWER DRAIN
DWS – DOMESTIC WATER SUPPLY

ROOF FLOOR INSTRUMENT TAGS:

01–RTU–M3–01
01–TIT–CTEW–01:02
01–TIT–CTLW–01:02
01–MOV–CTEW–01:08
01–MOV–CTLW–01:04
01–MOV–CTMW–01:04
01–MOV–CTD–01:04
01–LIT–CTB–01:04
01–FIT–CTMW–01:02
01–FIT–CTBD–01:02
01–LS–CTBH–01:04
01–LS–CTBL–01:04

01–RTU–M3–04
01–TIT–CTEW–03:04
01–TIT–CTLW–03:04
01–MOV–CTEW–09:16
01–MOV–CTLW–05:08
01–MOV–CTMW–05:08
01–MOV–CTD–05:08
01–LIT–CTB–05:08
01–FIT–CTMW–03:04
01–FIT–CTBD–03:04
01–MOV–ECHWS–05
01–MOV–ECHWR–05
01–DPIT–ECHW–01
01–TIT–ECHWS–01
01–MOV–ECHWS–01
01–FIT–ECHWS–01
01–TIT–ECHWR–01
01–PIT–EET–01
01–DPS–ECHW–01:02
01–LS–CTBH–05:08
01–LS–CTBL–05:08

01–RTU–M3–05
01–TIT–CTEW–05:06
01–TIT–CTLW–05:06
01–MOV–CTEW–17:24
01–MOV–CTLW–09:12
01–MOV–CTMW–09:12
01–MOV–CTD–09:12
01–LIT–CTB–09:12
01–FIT–CTMW–05:06
01–FIT–CTBD–05:06
01–MOV–ECHWS–06
01–MOV–ECHWR–06
01–DPIT–ECHW–02
01–LS–CTBH–09:12
01–LS–CTBL–09:12

AS - BUILT DRAWING
CHECED AND CERTIFIED BY CONTRACTOR REPRESENTATIVE
SIGNATURE: [signature] DATE: 29/12/24
NAME : Engr.Sajjad Hussain .
VERIFIED BY CONSULTANT REPRESENTATIVE
SIGNATURE: DATE: .
NAME .

NOTES:

1) SCADA NETWORK SLEEVES ARE CONSIDERED FOR LINKING BETWEEN BUILDINGS FLOORS & SCADA RISER WILL BE SUBMITTED.
2) ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
3) FOR RTU/PLC WIRING PLEASE REFER TO SUBMITTAL # CUC–MAT–BV–EL–BM–039–R03.
4) REFER TO ENGINEERING SUBMITTALS FOR P&ID, INSTRUMENTS HOOK–UP INSTRUMENTS LIST, CABLE SCHEDULE, OVERALL SYSTEM LAYOUT.
5) RTU PANELS INSTALLATION DETAILS REFER TO DRAWING#CUC–SD–SA–C03–GN–0001–R00
6) RTU PANELS COMMUNICATION BLOCK DIAGRAM REFER TO DRAWING # CUC–MAT–BV–EL–BM–050–R02

RELATED DOCUMENTS

NO.	WIR NO.	REV	DATE
01			

RELATED MATERIALS

NO.	NAME.	SUBMITAL NO.	STATUS
01	CUC–MAT–BV–EL–BM–032	PLC & SCADA MATERIAL SUBMITTAL	APPROVED
02	CUC–MAT–BV–EL–BM–045	INSTRUMENTS MATERIAL	APPROVED
03	CUC–MAT–BV–EL–BM–044	CONTROL CABLES MATERIAL SUBMITTAL	APPROVED
04	CUC–MAT–BV–EL–BM–051	TRUNKING & TRUNKS ACCESSORIES	APPROVED
05	CUC–MAT–BV–EL–BM–055	COMM. CABLE MATERIAL SUBMITTAL	APPROVED
06	CUC–MAT–BV–EL–BM–078	INSTRUMENTS SS TUBES & FITTINGS	APPROVED
07	CUC–MAT–BV–EL–BM–079	CONDUITS & FITTINGS	APPROVED
08	CUC–MAT–BV–EL–BM–056	FIBER OPTIC NETWORK	APPROVED
09	CUC–MAT–BV–EL–BM–062	GATEYWAYS MATERIAL SUBMITTAL	APPROVED
10	CUC–MAT–BV–EL–BM–040	MATERIAL SUBMITTAL DESCRIPTION	APPROVED
11	CUC–MAT–BV–EL–BM–039	PLC & RIO MECHANICAL & WIRING DIAGRAM	APPROVED
12	CUC–MAT–BV–EL–BM–083	P & ID	APPROVED
13	CUC–MAT–BV–EL–BM–050	SYSTEM LAYOUT	APPROVED

QUANTITY SURVEY

NO.	NAME.	QUANTITY	DATE

S.B.G. COORDINATION

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

R E V I S I O N

NO.	REVISION DESCRIPTION	ACTION CODE	DATE	BY
00	ISSUED FOR APPROVAL		29–12–24	NK

SHOP & DESIGN DRAWING REFERENCES

NO.	DWG. No.	DRAWING TITLE	REV.	DATE
01	CUC–SD–SA–C02–M3–1620	Third Mezz Process SCADA Cable Routing General Layout	03	21–07–2016
02	CUC–SD–SA–C02–M3–1621	Third Mezz Process SCADA Cable Routing Part 01 of 12	03	21–07–2016
03	CUC–SD–SA–C02–M3–1622	Third Mezz Process SCADA Cable Routing Part 02 of 12	03	21–07–2016
04	CUC–SD–SA–C02–M3–1623	Third Mezz Process SCADA Cable Routing Part 03 of 12	03	21–07–2016
05	CUC–SD–SA–C02–M3–1624	Third Mezz Process SCADA Cable Routing Part 04 of 12	03	21–07–2016
06	CUC–SD–SA–C02–M3–1625	Third Mezz Process SCADA Cable Routing Part 05 of 12	03	21–07–2016
07	CUC–SD–SA–C02–M3–1626	Third Mezz Process SCADA Cable Routing Part 06 of 12	03	21–07–2016
08	CUC–SD–SA–C02–M3–1627	Third Mezz Process SCADA Cable Routing Part 07 of 12	03	21–07–2016
09	CUC–SD–SA–C02–M3–1628	Third Mezz Process SCADA Cable Routing Part 08 of 12	03	21–07–2016

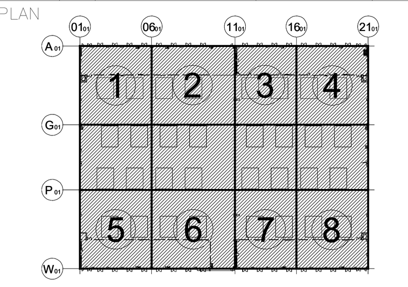
LETTERS & RFI'S REFERENCES

NO.	DOC. No.	DOCUMENT DESCRIPTION	DATE
01			
02			

DAR REVIEWER

CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
Survey	Y			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

KEY PLAN



PROJECT: المشروع

التوسعة السعودية الثالثة للمسجد الحرام والعناصر المرتبطة بها

THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

CLIENT: المالك

وزارة المالية
Ministry of Finance

DESIGN & CONSULTANT: الاستشاري

dar
making progress together

GENERAL CONTRACTOR: المقاول العام

SAUDI BINLADIN GROUP

SUB CONTRACTOR:

AVANCEON
Tomorrow's solutions, today.

ZONE NAME: وصف المبنى

CHILLER PLANT

DRAWING TITLE: اسم اللوحة

AS–BUILT CHILLER PLANT
THIRD MEZZANINE PROCESS SCADA
CABLE ROUTING GENERAL LAYOUT

DRAWN BY:	N.Khaliq		DATE	29/12/2024
CHECKED BY:	S.Hussain		SCALE	NTS
REVIEWED BY:	H.Shahbaz		SHEET SIZE	A0
APPROVED BY:	A.Saeed			

DRAWING & TRANSMITTAL No.

BUILDING NAME	DWG TYPE	TRADE	SUB TRADE	LEVEL	DRAWING NUMBER	REV. No.
CUC	AB	SA	C02	M3	1620	00

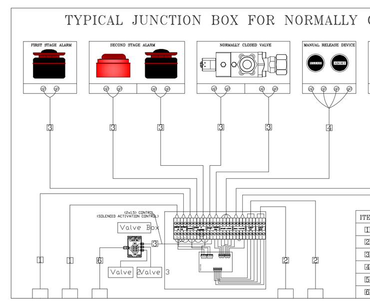
Cables Functions table

Cable size	From	To	Function of Cable
(1x2x0.5) Twisted pair loop cable	Securifire panel	Junction boxes (Bx-IM4 or BX-O2I4 or ASD 535(1-2))	for connecting all devices and modules on securifire loop
(3x2.5) control cable	Securifire panel	Junction box (BX-O2I4)	for solenoid of normally closed valve activation
(2x1.5) control cable	Junction box (BX-O2I4)	normally closed valve	for solenoid of normally closed valve activation
(1x4xAWG 22/7) Cate 5e	Securifire panel	other Securifire panel	for network between Securifire panels
(3x2.5) 24 dc voltage cable	Power supply	Junction boxes (Bx-IM4 or BX-O2I4 or ASD 535(1-2))	to supply 24 dc Voltage for operation and activation
(2x1.5) 24 dc voltage cable	Junction box (BX-O2I4)	first and second stage siren and flasher	to activate first and second stage siren and flasher

COMMENTS AND REPLY

comments	reply
The below clouded area of culvert is not covered by alarms devices, so Contractor shall study to Move little that first & second stage alarms devices in that location to cover the below clouded area of culvert.	noted and modified
No reference for using that panel and power supply and it's locations, so verify and provide the reference accordingly.	securifire panels and power supplies will be reflected in power shopdrawings after approval of HI-fog system drawings
Contractor shall consider Filling ratio for each conduit shall not Exceed 40%, so verify and update accordingly.	please refer to filling ratio table
No reference to indicate that cable trunk, Moreover there is no any reference indicate that cable trunk is an Existing cable trunk.	this cable trunk existing in site and BinLadin confirmed with Dar site to install cables on it
Missing size for that cable trunk and it's invert level, Moreover provide filling ratio for that cable trunk.	noted and modified please refer to filling ratio table
Outgoing and return for each cable shall not share the same conduit, contractor revise accordingly. (Typical for all other cables).	noted and modified according to NFPA 72
Clarify if There are any other cables from another system in that Existing cable trunk, Moreover it's recommended to use conduits instead of cable trunk for that cables raceways.	There are no cables on cable trunk and BinLadin confirmed with Dar site to install cables on it
For what using that cable (2x1.5) control cable. (Typical for all), clarify.	noted and modified refer to Cables functions table
Directions, raceways & connections of all cables for devices in this layout are different than indicated in Riser diagram, so verify and update riser diagram accordingly to be matched with it's layouts drawings.	noted
No reference for using that Valve box, provide accordingly, Moreover Missing the cables connections that connect to Module (BX-O2I4) and also to panel. (Typical for all). Missing indication about Valve Box and it's cable connections in Riser diagram.	please refer to detail A showing the valve box connections
As two sides right & left of culvert have a cable trunks, so how ASD will be installed, so Provide section detail for ASD along culvert and it's connections.	noted and modified typical installation details for ASD
There is no indication for that cable in legend. (Typical for all).	(4x0.75) control cable it is built in cable with limit switch of flush valve and ball valve
It's not accepted to indicate only 1 line of Conduit in layout, Although the Indicated Conduits are 2, So update to add 2 lines of conduits not 1 in layout accordingly.	noted and modified
Devices locations to match with Approved shop drawings for Hi-Fog system.	noted and modified
All the indicated cables on drawings are not traceable, Contractor to define each cable shall be connected (from which device to which device).	please refer to riser diagram
Contractor shall provide Filling ratio calculation in a table, assure to not exceed 40%.	noted and modified please refer to filling ratio table
Indicate each cable drawn from the power supply shall be connected to which device.	please refer to riser diagram
The Approved Manufacturer Stamp is required to ensure proper system connectivity.	Please note that the HI-FOG designer and reviewer by Deutschland technology limited as shown in legend
Function for each running cable to be indicated (indicate each cable shall be connected to which device).	noted and modified refer to Cables functions table
Loops cables to be identified with indicating where is loop cable going.	please refer to riser diagram
Final Approval for Materials is upon Material Approval.	noted
move little first & seond stage alarms in center of culvert.	noted and modified
Provide section detail for that Manual release device inside culvert.	noted and modified typical installation details for manual release point
it's not accepted that a cross connection, so update the connection like that.	noted and modified
This 4 or 2 Conduits, clarify.	it is 4 conduits please refer to typical installation detail for power supply
Provide the height FFL from bottom of power supply.	noted and modified
Provide the height FFL from bottom panel.	noted and modified
Missing Panel in legend.	noted and modified
Provide signatures from other trades in Coordination table.	noted and modified
Directions, raceways & connections of all cables of devices in layout are different than indicated in that Riser diagram, so verify and update riser diagram accordingly to be matched with it's layouts drawings.	noted and modified
As per below comments, contractor shall verify and update No.'s of Network cables that run in Conduits and cable trunk that run through that area.	noted and modified
Consider that Loop cable direction L2 to be like that through cable trunk which coming from SCP02.	noted and modified
Differentiate and clarify between network cables going to Panels in that Culvert and the other network cables going to panels in other Buildings.	noted and modified
Provide this conduit with its Box needed for End of Loop cable L1 that return to SCP02, as the end of L1 Cable shall path through conduits, So provide accordingly.	noted and modified
The path for that return Network cable is not matching and different than indicated in Topology diagram drawing# CUC-SD-MS-M02-CT-3533-00, as that return network cable run from Panel# SCP-03 panel that located inside room# GR-022-F3 room and connect to Panel# SCP-01 in GR-009-F3 room through an internal path inside same Generator Building not through culvert as indicated in Shop drawings# UGE-SD-ER-E02-GL-3212 & UGE-SD-ER-E02-GL-3214, so verify and update accordingly.	noted and modified
There is no reference for that drawing, so verify accordingly.	noted
why there are two Network cables connections between panel# SCP-02 located in 1st-61-F2 room in Chiller plant and panel#SCP-01 in GR-009-F3 room in Generator Building which is different than indicated in Topology diagram drawing# CUC-SD-MS-M02-CT-3533 that there is only one network cable connect between them and the other network cable for SCP-02 that located in 1st-61-F2 room in chiller plant connect to other panel in other Building, so verify and update accordingly.	noted and modified
Provide signatures from other trades in Coordination table. (Repeated comment).	noted

TYPICAL JUNCTION BOX FOR NORMALLY CLOSE VALVE



1	1	(3X2.5) 24 DC VOLTAGE CABLE
2	1	(1x2x0.5) TWISTED PAIR CABLE
3	1	(2x1.5) CONTROL CABLE
4	1	(5x1.5) CONTROL CABLE
5	1	(4*0.75) CONTROL CABLE
6	1	(3x2.5) CONTROL CABLE

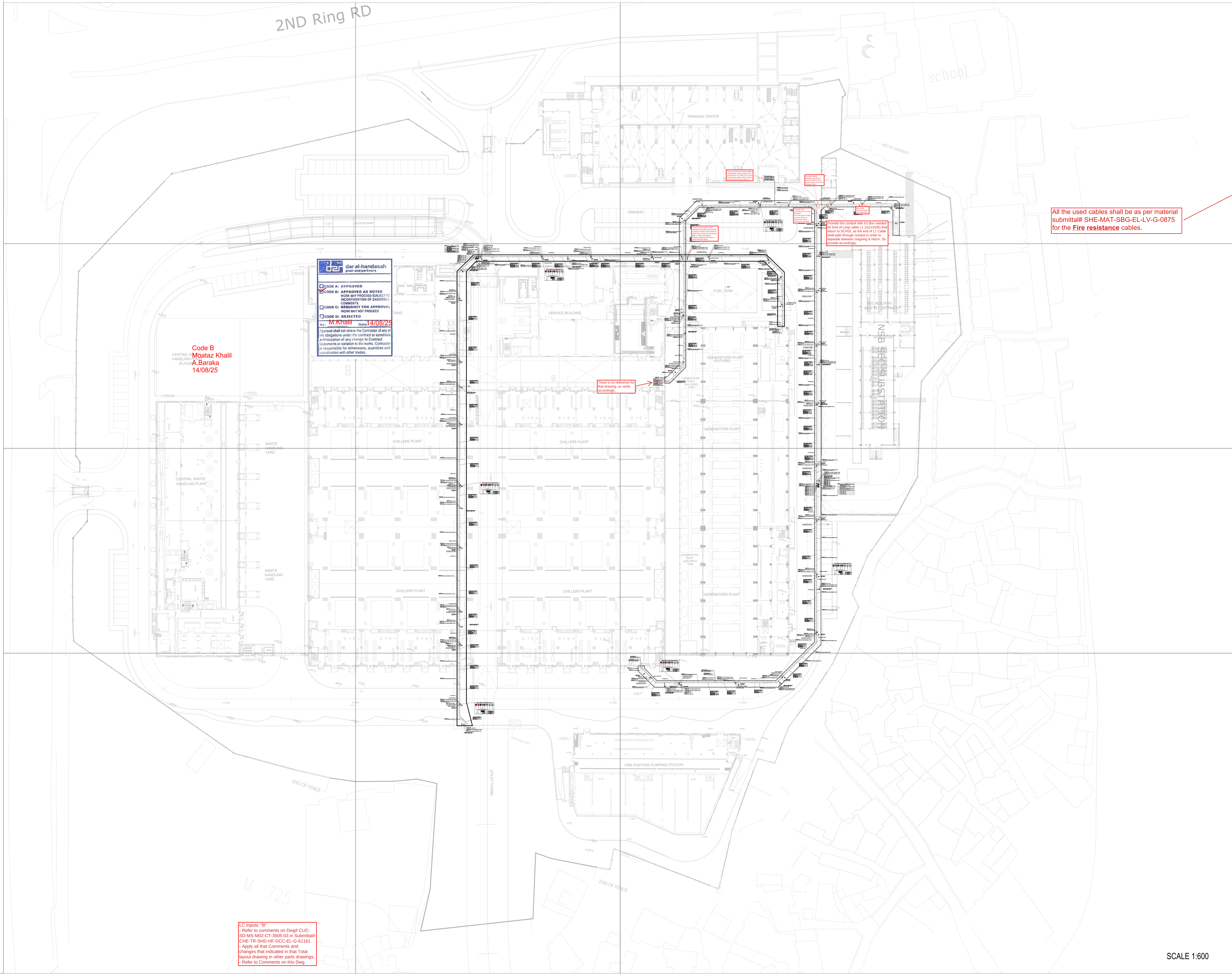
Detail A

Filling Ratio Calculations For CUC Project CUC CULVERT

CONDUITS	CABLES.NO	CABLE TYPE	FILLING RATIO
1	1	(1X2X0.5)TWISTED PAIR CABLE	27.76 %
	1	(3X2.5) CONTROL CABLE	
2	1	(1X2X0.5)TWISTED PAIR CABLE	33.97 %
	1	(3X2.5) CONTROL CABLE	
	1	(1X4XAWG 22/7) CAT5E CABLE	
3	1	(1X2X0.5)TWISTED PAIR CABLE	32.07 %
	1	(2X1.5) CONTROL CABLE	
	1	(1X4XAWG 22/7) CAT5E CABLE	
4	1	(1X2X0.5)TWISTED PAIR CABLE	15.86 %
	1	(1X4XAWG 22/7) CAT5E CABLE	
5	1	(1X2X0.5)TWISTED PAIR CABLE	25.86 %
	1	(2X1.5) CONTROL CABLE	
6	1	(1X2X0.5)TWISTED PAIR CABLE	9.65 %
7	1	(2X1.5) CONTROL CABLE	16.21 %
8	2	(2X1.5) CONTROL CABLE	32.42 %
9	1	(1X4XAWG 22/7) CAT5E CABLE	6.21 %
10	1	(3X2.5) 24 DC VOLTAGE CABLE	18.11 %
11	2	(3X2.5) 24 DC VOLTAGE CABLE	36.23 %

Filling Ratio Calculations For Low Current Cable Trunk (600x100)mm CUC CULVERT

CABLES.NO	CABLE TYPE	FILLING RATIO
1	(1X2X0.5)TWISTED PAIR CABLE	28.23 %
9	(3X2.5) 24 DC VOLTAGE CABLE	
4	(3X2.5) CONTROL CABLE	
1	(2X1.5) CONTROL CABLE	
1	(1X4XAWG 22/7) CAT5E CABLE	
1	(1X2X0.5)TWISTED PAIR CABLE	15.28 %
4	(3X2.5) 24 DC VOLTAGE CABLE	
2	(3X2.5) CONTROL CABLE	
1	(2X1.5) CONTROL CABLE	
1	(1X4XAWG 22/7) CAT5E CABLE	
1	(1X2X0.5)TWISTED PAIR CABLE	19.85 %
7	(3X2.5) 24 DC VOLTAGE CABLE	
3	(3X2.5) CONTROL CABLE	
1	(1X2X0.5)TWISTED PAIR CABLE	19.75 %
7	(3X2.5) 24 DC VOLTAGE CABLE	
2	(3X2.5) CONTROL CABLE	
1	(2X1.5) CONTROL CABLE	
1	(1X2X0.5)TWISTED PAIR CABLE	22.78 %
8	(3X2.5) 24 DC VOLTAGE CABLE	
3	(3X2.5) CONTROL CABLE	
1	(1X4XAWG 22/7) CAT5E CABLE	



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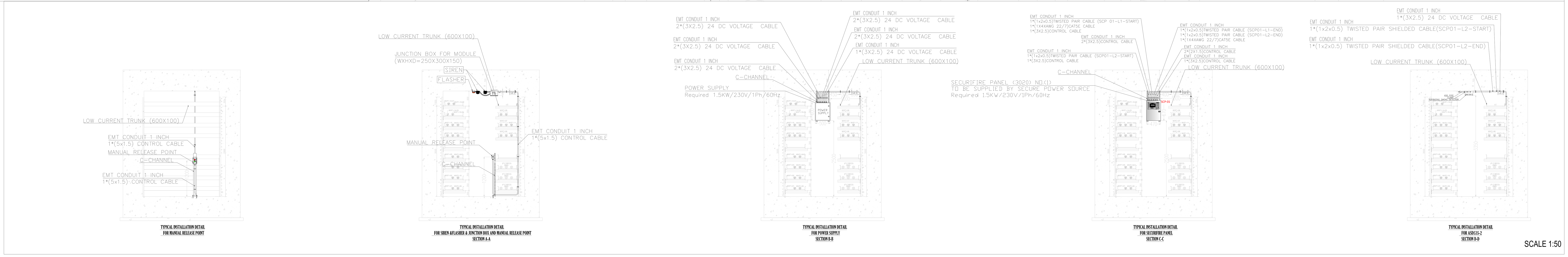

SCALE 1:50

Kingdom of Saudi Arabia

GENERAL NOTES

1- THIS DRAWING DETAILING THE HI-FOG FIRE FIGHTING SYSTEM CABLING REQUIREMENTS.
2-ALL HI-FOG SYSTEM COMPONENTS SHOWN IN THIS DRAWING IS IN ACCORDANCE TO THE MATERIAL SUBMITTAL AND ANY RELATED REVISIONS AND/OR RELATED RFI.
3-ANY MODIFICATION/ADAPTATION OF THIS DRAWING SHALL BE DONE ONLY BY THE HI-FOG CONTRACTOR,THIS IS TO ASSURE THE SYSTEM FUNCTIONALITY.
4-ALL RACEWAYS ,CONDUITS,CABLE TRAYS,CABLE TRUNKS AND LADDERS ARE TO BE SUPPLIED AND INSTALLED BY SBG.
5-ALL DIMENSIONS ARE IN MILLIMETERS .
6-THIS DWG. IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING DRAWINGS, SUCH AS ARCHITECTURAL,AND STRUCTURAL AND ALSO SPECIFICATION,REGULATION STANDARD.
7-MAXIMUM FILLING RATIO IS 40% FOR TRUNKING/CONDUITS.
8-PULL BOXES SHALL BE PROVIDED FOR CONDUIT RUNS MORE THAN 9M STRAIGHT LENGTH OR AS PER SITE CONDITION AND MUST BE ACCESSIBLE OR EVERY 2*90° BENDS.
9-INNER DIAMETER FOR 1 INCH EMT CONDUIT IS 26.08 mm .

MESC CABLE DETAILS

CABLE CODE	Cable Size	O.D(mm)
026Y-01P00050-U0BK8-L5	(1x2x0.5)	8.1
761Y-02C00150-U0BK8-SI	(2x1.5)	10.5
761Y-05C00150-U0BK8-SI	(5x1.5)	13.1
761Y-12C00150-U0BK8-SI	(12x1.5)	18.5
761Y-03C00250-U0BK8-SI	(3x2.5)	11.1
LKD7KS500750000 (LEONI)	CAT.5E (1X4XAWG 22/7)	6.5

PANASONIC EMT CONDUITS DETAILS

SIZE (inch)	OUTSIDE DIAMETER (mm)	WALL THICKNESS (mm)	INNER DIAMETER (mm)
1	29.54	1.73	26.08

ITEM	Description
	SECURIFIRE PANEL
A.S.D	Aspirating Smoke Detector (ASD535-2) with two sampling pipe
A.S.D	Aspirating Smoke Detector (ASD535-1) with one sampling pipe
	FLOW SWITCH (F.S)
	N.C VALVE
	BALL VALVE (B.V)
MODULE BX-IM4	JUNCTION BOX FOR BX-IM4 MODULE W x H x D : 200 x 250 x 150
MODULE BX-O2I4	JUNCTION BOX FOR BX-O2I4 MODULE W x H x D : 250 x 300 x 150
	SOUNDER ALARM
	FLASHER ALARM
	MANUAL RELEASE PANEL

DESIGN DRAWINGS REFS

REFERANCES	REV.	DRAWING TITLE
S09077-01D-TD-07-AR-101	07	CULVERT DRAWING
S09077-01D-TD-00-UD-101	02	CULVERT DRAWING
SHE-MA-EX-ME-FF-392	09	TECHNICAL SUBMITAL
CUC-SD-MS-M03-00-0003	02	ALARM DETAIL
CUC-SD-MS-M03-00-0002	00	PIPE SUPPORT DETAILS
CUC-SD-MS-M03-00-0001	00	HI-FOG CONNECTION DRAWING
UT/RFI/SBG-DC/ME-G/0830	00	R.F.I
CUC-SD-MS-M02-CT-0001	05	HI-FOG WATER MIST SYSTEM CUC UTILITY CULVERT
CUC-SD-MS-M02-CT-(0004 , ... , 0013)	04	HI-FOG WATER MIST SYSTEM CUC UTILITY CULVERT

REVISION

NO.	REVISION DESCRIPTION	ACTION CODE	DATE	BY
00	ISSUED FOR APPROVAL		27-09-2020	ELECTRICAL DESIGN TEAM
01	ISSUED FOR APPROVAL		02-12-2024	ELECTRICAL DESIGN TEAM
02	ISSUED FOR APPROVAL		07-05-2025	ELECTRICAL DESIGN TEAM
03	ISSUED FOR APPROVAL		16-06-2025	ELECTRICAL DESIGN TEAM
04	ISSUED FOR APPROVAL		16-07-2025	ELECTRICAL DESIGN TEAM

S.B.G. COORDINATION

CHECKED		SIGNATURE	DATE
ARCHITECTURAL	A		
STRUCTURAL	S		
CIVIL	C		
PLUMBING	P	[signature]	18-06-2025
FIRE FIGHTING	F	[signature]	18-06-2025
MECHANICAL	M		
ELECTRICAL	E	[signature]	18-06-2025
LOW CURRANT	E	[signature]	18-06-2025
DRAWING QUALITY CONTROL CHECK	✓		

PROJECT : المشروع
KING ABDULLAH BIN ABDULAZIZ PROJECT
THIRD SAUDI EXPANSION OF HOLY HARAM
MAKKAH & SURROUNDING AREAS
مشروع خادم الحرمين الشريفين
الملك عبد الله بن عبد العزيز
لتوسعة المسجد الحرام
والعناصر المرتبطة بها

Key Plan

1 2 3
4 5 6
7 8 9
10 11 12

CONTRACTOR :- المقاول
SAUDI BINLADIN GROUP
مجموعة بن لادن السعودية

CONSULTANT : الاستشاري
دار الهندسة للتصميم والاستشارات الفنية
(شاعر ومشاركوه)
DAR AL-HANDASAH
SHAIR AND PARTNERS

TITLE :-
CENTRAL UTILITY COMPLEX & UTILITY TUNNEL
CONTROL AND POWER FOR HI-FOG SYSTEM

SUB CONTRACTOR:
INMA
شركة إنماء المرافق للمقاولات
INMA UTILITIES CONTRACTING CO.

WATER MIST CONTRACTOR :
DEUTSCHLAND TECHNOLOGY
DEUTSCHLAND TECHNOLOGY LIMITED
VdS Vertrauen durch Sicherheit
HI-FOG®
Headquarters:
Block 4, Industrial Zone A, Obour City, Cairo, Egypt
Tel : +20246105725 - FAX :+20246105729
Our Branches:
Egypt - KSA - Qatar - Turkey - Jordan - Bahrain - Oman - Nigeria - UAE
SITE: www.dt-holding.com
EMAIL: sales@dt-holding.com

Drawing No.
CUC-SD-MS-M02-CT-3500-R04

DRAWING NAME :
CENTRAL UTILITY COMPLEX & UTILITY TUNNEL CULVERT DRAWING CONTROL AND POWER FOR HI-FOG SYSTEM TOTAL LAYOUT

SCALE	SIZE	DATE	REV.
AS SHOWN	A0	16 07 2025	04

DESIGNER	ELECTRICAL DESIGN TEAM DEUTSCHLAND TECHNOLOGY
CHECKED	FAWZY SALAH DEUTSCHLAND TECHNOLOGY
APPROVED	Dr. Eng. Mohamed Sorour Deutschland Technology

CAUTION
This drawing is property of Deutschland Technology.
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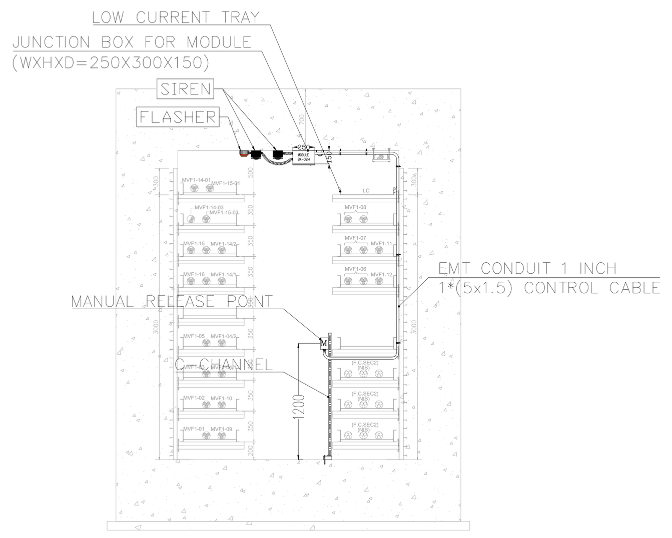
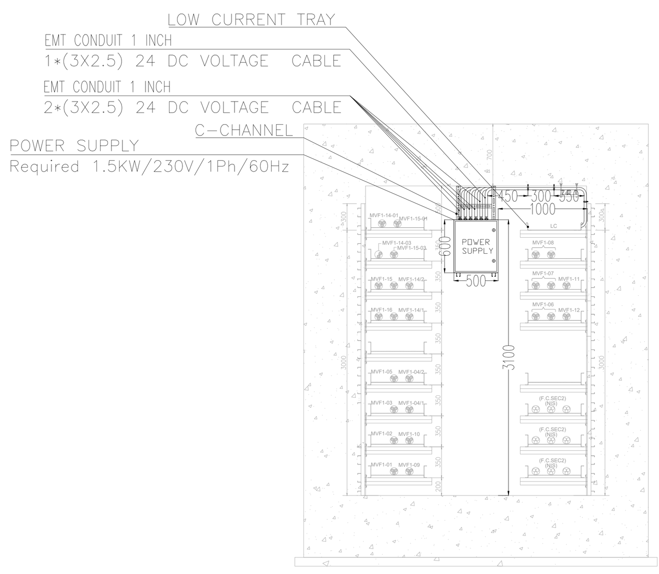
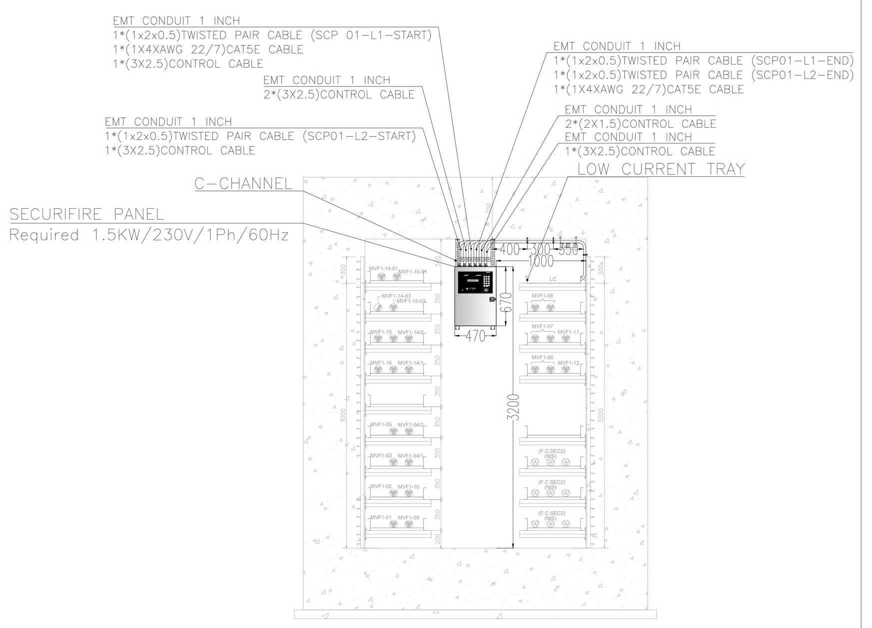
SCALE 1:600



TYPICAL INSTALLATION DETAIL
FOR SIREN &FLASHER & JUNCTION BOX AND MANUAL RELEASE POINT
SECTION A-A



TYPICAL INSTALLATION DETAIL
FOR POWER SUPPLY
SECTION B-B



TYPICAL INSTALLATION DETAIL
FOR SECURIFIRE PANEL
SECTION C-C

SCALE 1:50

Kingdom of Saudi Arabia

GENERAL NOTES

1- THIS DRAWING DETAILING THE HI-FOG FIRE FIGHTING SYSTEM CABLING REQUIREMENTS.
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6-THIS DWG. IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING DRAWINGS, SUCH AS ARCHITECTURAL,AND STRUCTURAL AND ALSO SPECIFICATION,REGULATION STANDARD.
7-MAXIMUM FILLING RATIO IS 40% FOR TRUNKING/CONDUITS.
8-PULL BOXES SHALL BE PROVIDED FOR CONDUIT RUNS MORE THAN 9M STRAIGHT LENGTH OR AS PER SITE CONDITION AND MUST BE ACCESSIBLE OR EVERY 2*90° BENDS.
9-INNER DIAMETER FOR 1 INCH EMT CONDUIT IS 26.08 mm .

MESC CABLE DETAILS

CABLE CODE	Cable Size	O.D(mm)
026Y-01P00050-U0BK8-L5	(1x2x0.5)	8.1
761Y-02C00150-U0BK8-SI	(2x1.5)	10.5
761Y-05C00150-U0BK8-SI	(5x1.5)	13.1
761Y-12C00150-U0BK8-SI	(12x1.5)	18.5
761Y-03C00250-U0BK8-SI	(3x2.5)	11.1
LKD7KS500750000 (LEONI)	CAT.5E (1X4XAWG 22/7)	6.5

PANASONIC EMT CONDUITS DETAILS

SIZE (inch)	OUTSIDE DIAMETER (mm)	WALL THICKNESS (mm)	INNER DIAMETER (mm)
1	29.54	1.73	26.08

ITEM	Description
A.S.D	Aspirating Smoke Detector (ASD535-2) with two sampling pipe
A.S.D	Aspirating Smoke Detector (ASD535-1) with one sampling pipe
	FLOW SWITCH (F.S)
	N.C VALVE
	BALL VALVE (B.V)
MODULE BX-IM4	JUNCTION BOX FOR BX-IM4 MODULE W x H x D : 200 x 250 x 150
MODULE BX-02I4	JUNCTION BOX FOR BX-02I4 MODULE W x H x D : 250 x 300 x 150
	SOUNDER ALARM
	FLASHER ALARM
	MANUAL RELEASE PANEL

DESIGN DRAWINGS REFS

REFERANCES	REV.	DRAWING TITLE
S09077-01D-TD-07-AR-101	07	CULVERT DRAWING
S09077-01D-TD-00-UD-101	02	CULVERT DRAWING
SHE-MA-EX-ME-FF-392	09	TECHNICAL SUBMITAL
CUC-SD-MS-M03-00-0003	02	ALARM DETAIL
CUC-SD-MS-M03-00-0002	00	PIPE SUPPORT DETAILS
CUC-SD-MS-M03-00-0001	00	HI-FOG CONNECTION DRAWING
UT/RFI/SBG-DC/ME-G/0830	00	R.F.I
CUC-SD-MS-M02-CT-0001	05	HI-FOG WATER MIST SYSTEM CUC UTILITY CULVERT
CUC-SD-MS-M02-CT-(0004 , ... , 0013)	04	HI-FOG WATER MIST SYSTEM CUC UTILITY CULVERT

REVISION

NO.	REVISION DESCRIPTION	ACTION CODE	DATE	BY
00	ISSUED FOR APPROVAL		27-09-2020	ELECTRICAL DESIGN TEAM
01	ISSUED FOR APPROVAL		02-12-2024	ELECTRICAL DESIGN TEAM

S.B.G. COORDINATION

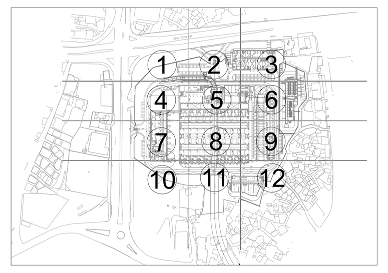
CHECKED		NAME.	SIGNATURE	DATE
ARCHITECTURAL	A			
STRUCTURAL	S			
CIVIL	C			
PLUMBING	P			
FIRE FIGHTING	F			
MECHANICAL	M			
ELECTRICAL	E			
LOW CURRANT	E			
DRAWING QUALITY CONTROL CHECK	✓			

PROJECT : المشروع

KING ABDULLAH BIN ABDULAZIZ PROJECT
THIRD SAUDI EXPANSION OF HOLY HARAM
MAKKAH & SURROUNDING AREAS

مشروع خادم الحرمين الشريفين
الملك عبد الله بن عبد العزيز
لتوسعة المسجد الحرام
والعناصر المرتبطة بها

Key Plan



CONTRACTOR :- المقاول

SAUDI BINLADIN GROUP
مجموعة بن لادن السعودية

CONSULTANT : الاستشاري

دار الهندسة للتصميم والاستشارات الفنية
(شاعر ومشاركوه)
DAR AL-HANDASAH
SHAIR AND PARTNERS

TITLE :-

CENTRAL UTILITY COMPLEX & UTILITY TUNNEL
CABLE TRUNK FOR HI-FOG SYSTEM

SUB CONTRACTOR:

INMA
شركة إنماء المرافق للمقاولات
INMA UTILITIES CONTRACTING CO.

WATER MIST CONTRACTOR :
DEUTSCHLAND TECHNOLOGY
DEUTSCHLAND TECHNOLOGY LIMITED
VdS Vertrauen durch Sicherheit
HI-FOG®

Headquarters:
Block 4, Industrial Zone A, Obour City, Cairo, Egypt
Tel : +20246105725 - FAX :+20246105729

Our Branches:
Egypt - KSA - Qatar - Turkey - Jordan - Bahrain - Oman - Nigeria - UAE

SITE :www.dt-holding.com
EMAIL :sales@dt-holding.com

Drawing No.
CUC-SD-MS-M02-CT-3500-R01

DRAWING NAME :
CENTRAL UTILITY COMPLEX & UTILITY TUNNEL CULVERT DRAWING CABLE TRUNK FOR HI-FOG SYSTEM TOTAL LAYOUT

SCALE AS SHOWN | SIZE A0 | DATE 02 12 2024 | REV. 01

DESIGNER	ELECTRICAL DESIGN TEAM DEUTSCHLAND TECHNOLOGY
CHECKED	FAWZY SALAH DEUTSCHLAND TECHNOLOGY
APPROVED	Dr. Eng. Mohamed Sorour Deutschland Technology

CAUTION
This drawing is property of Deutschland Technology.
It is not to be disclosed, traced, copied or published without our written consent, not to be misused in any way.

Consultant: dar making progress together	THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS	Contractor: SAUDI BINLADIN GROUP Haramain Division قطاع الحرمين الشريفين
Project Ref: P1150C		Issue Date: 15-Nov-2025

CLARIFICATION REQUEST (CR)

Sub-Project Name: **THIRD SAUDI EXPANSION OF THE HOLY MOSQUE & SURROUNDING AREAS**

CLARIFICATION REQUEST REFERENCE NO. **CUC-CLR-DDR-SBG-SDCC-EL-LC-0049**

TO :	DAR AL-HANDASAH	**FROM :**	SBG-(HaramainDivision)
PACKAGE # / BLDG.	CUC -P1150C	**DISCIPLINE:**	ELECTRICAL - LC.

SUBJECT: **Response to Consultant's Comments on CLR # CUC-CLR-DDR-SBG-SDCC-EL-LC-0045**

REQUEST:
(Reference: CLR # CUC-CLR-DDR-SBG-SDCC-EL-LC-0045)

Kindly find below our response to the consultant's comments on CLR # CUC-CLR-DDR-SBG-SDCC-EL-LC-0045, related to the CUC Process SCADA Updated System Architecture.

This submission is provided for your kind review and approval.

FOR CONTRACTOR

NAME : Mohamed Labib **SIGNATURE :** [signature] **DATE :** [stamp: QUALITY DEPARTMENT SDCC SBG-FPD]

CONSULTANT RESPONSE :

The updated System Arch. is accepted, condition to covering the following:

1- Contractor shall consider/add integration with Pedestrian tunnels SCADA.
2- No. of servers and work stations shall be as per approved material submittal.
3- allocation of servers / work stations are under contractor responsibility.
4- The Contractor is fully responsible for coordinating with all third-party suppliers, including obtaining all necessary information, and for ensuring that all required integration protocols are properly implemented.

A.P

FOR CONSULTANT

NAME : A.P **SIGNATURE :** A.P **DATE :**

RESPONSE RECEIVED BY CONTRACTOR :

NAME : **SIGNATURE :** **DATE :**

This Site Clarification shall not authorize any change to the Contract or constitute a variation to the Contract Sum or duration. If the clarification response has impact on the shopdrawing or material submittal, Contractor is obliged to revise the relevant document and resubmit for approval.

Project Title:

KING ABDULLAH BIN ABDULAZIZ PROJECT THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

Drawing No:

KSA-230302-SA-03

Drawing Package:

PROCESS SCADA SYSTEM FOR CUC MAKKAH SYSTEM ARCHITECTURE DRAWING

R.NO	DATE	DESCRIPTION	DRAWN	CHECKED
3	10.08.24	ISSUED FOR 4th APPROVAL	AA	MSF
2	16.07.24	ISSUED FOR 3rd APPROVAL	AA	MSF
1	11.06.24	ISSUED FOR 2nd APPROVAL	AA	MSF
0	26.01.24	ISSUED FOR 1st APPROVAL	AA	MSF

PROJECT:

CENTRAL UTILITY COMPLEX & UTILITY TUNNEL

CLIENT:

وزارة المالية
Ministry of Finance

KING ABDULLAH BIN ABDULAZIZ PROJECT THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

CONSULTANT:

dar
making progress together

CONTRACTOR:

SAUDI BINLADIN GROUP

SYSTEM INTEGRATOR:

AVANCEON
Tomorrow's solutions, today.

Drawing Title:

PROCESS SCADA SYSTEM FOR CUC MAKKAH
SYSTEM ARCHITECTURE DRAWING
COVER SHEET

FORMAT: A3			
SCALE : NTS	DATE : 10/08/24	Sheet	Rev.
Drawing No:	KSA-230302-SA-03	01	3

TABLE OF CONTENTS

PAGE NO.	DRAWING TITLE	REVISIONS							
		REV 0	REV 1	REV 2	REV 3	REV 4	REV 5	REV 6	REV 7
01	COVER PAGE	26.01.24	11.06.24	16.07.24	10.08.24				
02	INDEX SHEET	26.01.24	11.06.24	16.07.24	10.08.24				
03	OVERALL SYSTEM TOPOLOGY	26.01.24	11.06.24	16.07.24	10.08.24				
04	CHILLER PLANT SYSTEM TOPOLOGY	26.01.24	11.06.24	16.07.24	10.08.24				
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PROJECT:
CENTRAL UTILITY COMPLEX
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KING ABDULLAH BIN ABDULAZIZ PROJECT
THIRD SAUDI EXPANSION
OF HOLY HARAM MAKKAH
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CONSULTANT:
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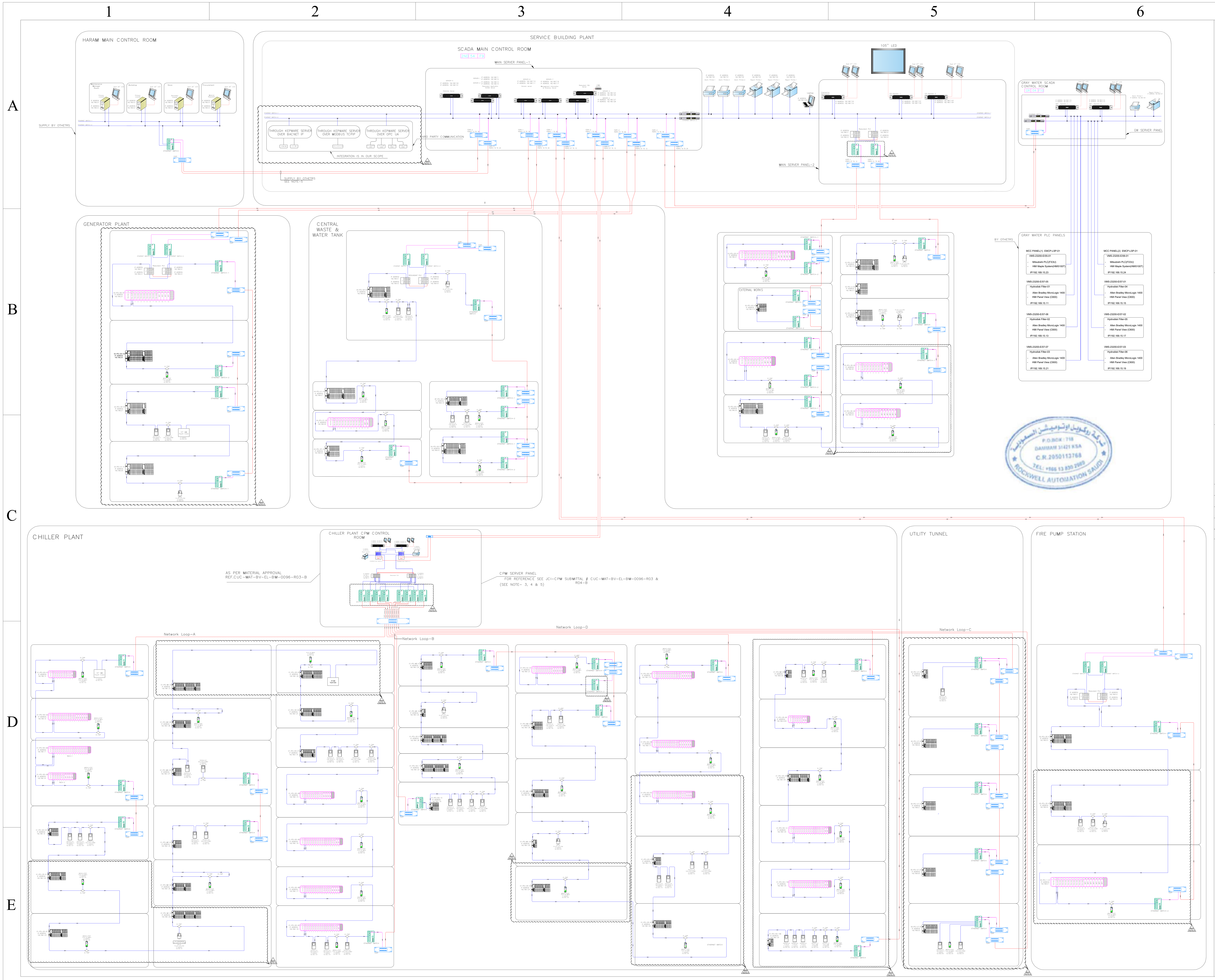
CONTRACTOR: المقاول
SAUDI BINLADIN GROUP
مجموعة بن لادن السعودية

SYSTEM INTEGRATOR:
AVANCEON
Tomorrow`s solutions, today.

Drawing Title:
PROCESS SCADA SYSTEM FOR CUC MAKKAH
SYSTEM ARCHITECTURE DRAWING
INDEX SHEET

FORMAT: A3

SCALE : NTS	DATE : 10/08/24	Sheet	Rev.
Drawing No: KSA-230302-SA-03		02	3



NOTES:

1. ETHERNET CABLES ARE TO BE USED FOR THE CONNECTIVITY OF RTU/RIO PANELS OVER A MAXIMUM DISTANCE OF 100 METERS, WHILE FIBER OPTIC CABLES WITH SWITCHES ARE TO BE UTILIZED FOR DISTANCES EXCEEDING 100 METERS.
2. NEW ADDITIONS OF RTU/RIO PANELS FOR EXTENSION OF 8 CHILLERS (B-165 SCOPE);
   - 2.1. 01-RTU-BS-11B
   - 2.2. 01-RTU-BS-12
   - 2.3. 01-RTU-GR-7B
   - 2.4. 01-RTU-GR-08
   - 2.5. 01-RTU-M3-08
   - 2.6. 01-RTU-BS-10B
3. TO EXPEDITE THE PROJECT INSTALLATION PROGRESS AND TIMELY INTEGRATION, IT IS CRUCIAL FOR THE COMPLETION OF THE RING CONNECTIVITY OF DLR NETWORK LOOPS A AND B TO ENSURE THE UNINTERRUPTED OPERATION OF PRIORITY CHILLERS. HENCE, BOTH SBG AND JCI HAVE DECIDED AND AGREED TO PROCEED WITH FOUR LOOPS BY ADDING TWO ADDITIONAL LOOPS (C AND D), AS GIVEN BELOW:
   - DLR NETWORK LOOPS A AND B FOR EXISTING CHILLER RTUS
   - DLR NETWORK LOOP C FOR UTILITY TUNNEL RTUS
   - DLR NETWORK LOOP D FOR EXPANSION CHILLER RTUS.
4. FIBER OPTIC CABLE BETWEEN HARAM MAIN CONTROL ROOM AND SCADA MAIN CONTROL ROOM WILL BE SUPPLIED/LAID BY OTHERS.
5. REMOVE FIBER BECAUSE DISTANCE IS LESS THEN 100METER.
6. ADD ADDITIONAL SWITCH AS PER ROCKWELL RECOMMENDATION.
7. ADD KEPWARE BACNET IP DUE TO THE LIMITATION OF TAG.
8. AS PER ROCKWELL RECOMMENDATION.

LEGEND

- FIBER OPTIC PATCH PANEL(FOPP)
- ETHERNET/IP COMMUNICATION MODULES(E-TAP)
- ENET/IP TO PROFIBUSPA LINK DEVICE
- ETHERNET/IP TO MODBUS SERIAL GATEWAY
- MAIN FIRE ALARM CONTROL PANEL
- ETHERNET SWITCH

Ethernet Copper Cable	(blue line)
Fiber Optic Cable	(red line)
Patch Cord Cable	(magenta line)
HDMI Cable	(pink line)

ABBREVIATION

DI	DIGITAL INPUT	EM	EMPTY MODULE
DO	DIGITAL OUTPUT	PS	POWER SUPPLY
AI	ANALOG INPUT	ETH	ETHERNET MODULE
AO	ANALOG OUTPUT	FOPP	FIBER OPTIC PATCH PANEL

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PROJECT:

CENTRAL UTILITY COMPLEX
& UTILITY TUNNEL

CLIENT:

وزارة المالية
Ministry of Finance

KING ABDULLAH BIN ABDULAZIZ PROJECT
THIRD SAUDI EXPANSION
OF HOLY HARAM MAKKAH
& SURROUNDING AREAS

CONSULTANT:

dar
making progress together

CONTRACTOR: المقاول

SAUDI BINLADIN GROUP
مجموعة بن لادن السعودية

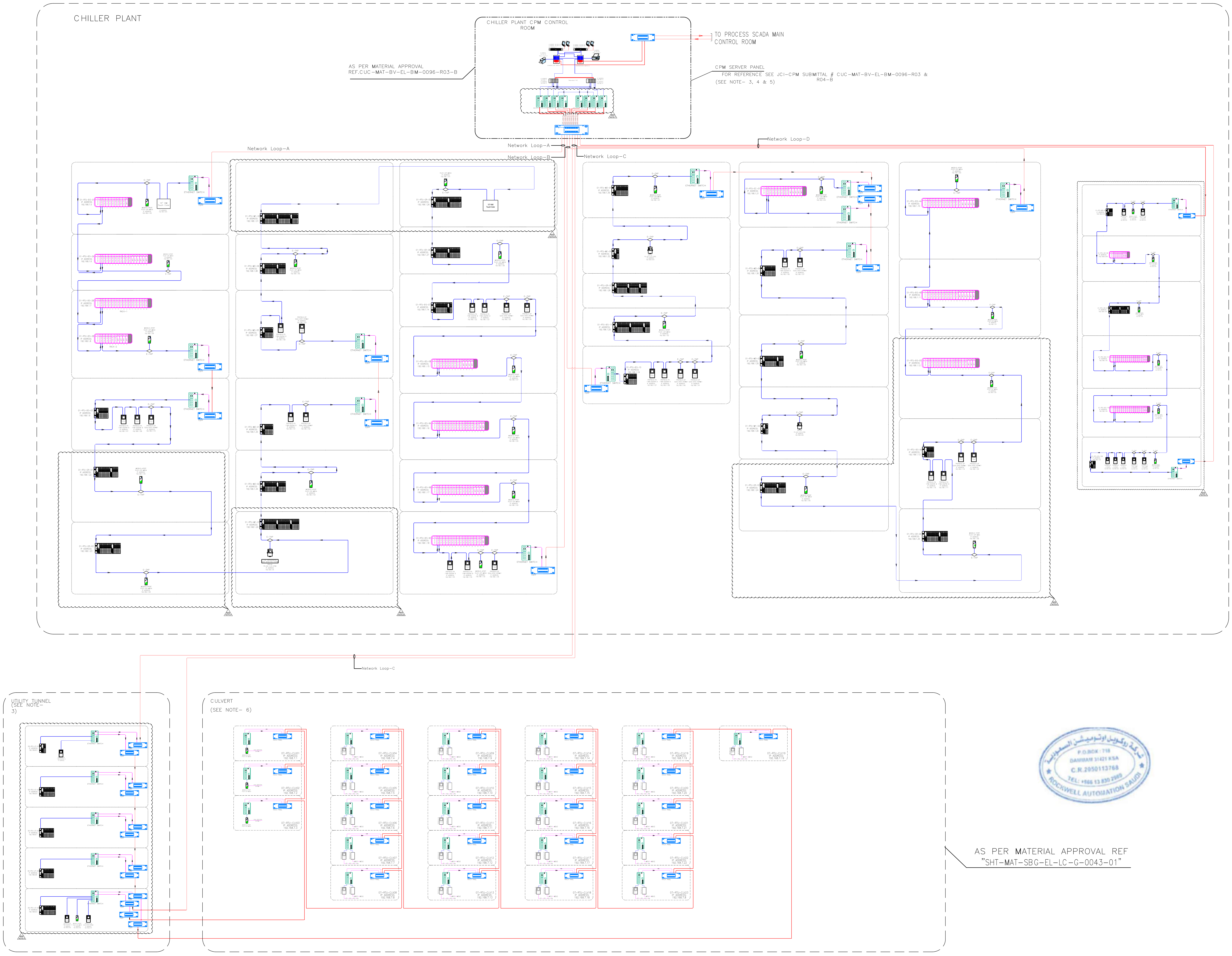
SYSTEM INTEGRATOR:

AVANCEON
Tomorrow`s solutions, today.

Drawing Title:

PROCESS SCADA SYSTEM FOR CUC MAKKAH
SYSTEM ARCHITECTURE DRAWING
OVERALL SYSTEM TOPOLOGY

FORMAT: A3			
SCALE : NTS	DATE : 10/08/24	Sheet	Rev.
Drawing No:	KSA-230302-SA-03	03	3



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   - DLR NETWORK LOOP C FOR UTILITY TUNNEL RTUS
   - DLR NETWORK LOOP D FOR EXPANSION CHILLER RTUS.
4. ADDITION OF CLV01 TO CVL24 PANELS.
5. CULVERT RTU PANELS & COMMUNICATION ARE NOT IN AVANCEON SCOPE
   FOR DETAILS PLEASE REFER TO APPROVED MATERIAL AND ENGINEERING SUBMITTAL "SHT-MAT-SBG-EL-LC-G-0043-01".
6. REMOVE FIBER BECAUSE DISTANCE IS LESS THEN 100METER.
7. ADD ADDITIONAL SWITCH AS PER ROCKWELL RECOMMENDATION.
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PROJECT:

CENTRAL UTILITY COMPLEX & UTILITY TUNNEL

CLIENT:

وزارة المالية
Ministry of Finance

KING ABDULLAH BIN ABDULAZIZ PROJECT THIRD SAUDI EXPANSION OF HOLY HARAM MAKKAH & SURROUNDING AREAS

CONSULTANT:

dar
making progress together

CONTRACTOR:

SAUDI BINLADIN GROUP

SYSTEM INTEGRATOR:

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Drawing Title:

PROCESS SCADA SYSTEM FOR CUC MAKKAH SYSTEM ARCHITECTURE DRAWING CHILLER PLANT SYSTEM TOPOLOGY

FORMAT: A3

SCALE : NTS	DATE : 10/08/24	Sheet	Rev.
Drawing No: KSA-230302-SA-03		04	3

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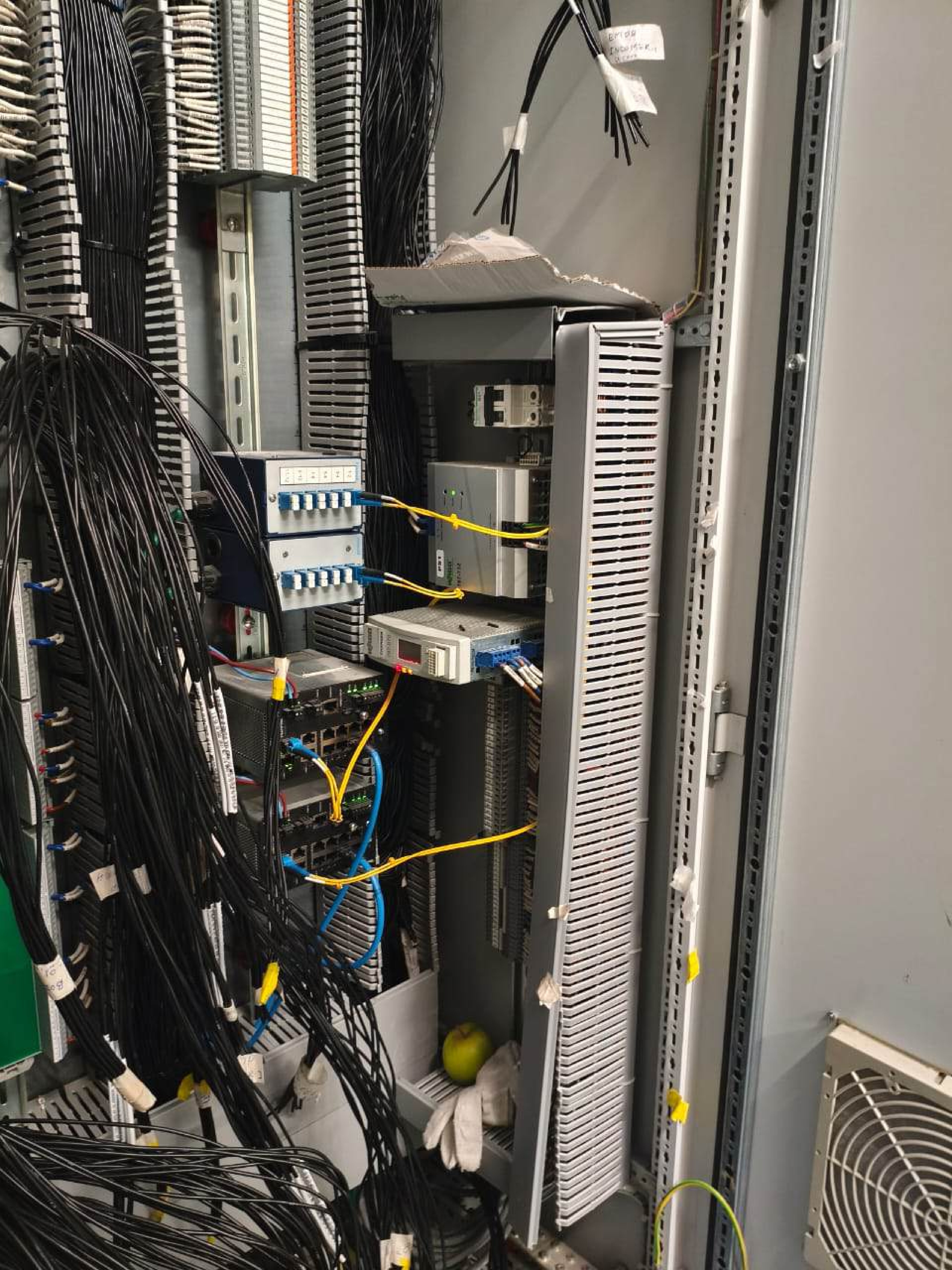

01-RTU-M3-04

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X7
X8
X10
X11
X12